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OUR AUTHORS



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Lieutenant Colonel Andrew J. Boyle became an instructor at the C&GSC in 1949. During WW II, he served with SHAEF in the ETO. After the War, he served in Germany as Deputy Chief of FIAT. Subsequent assignments include instructor at the Armored School, and as a student at the AFSC, Norfolk, Virginia.

Colonel Alfred B. Denniston has been a member of the faculty of the AWC since 1950. During WW II, he served in the G4 Sections of Hq, Hawaiian Dept; Hq, AGF; and the ETOUSA. In September 1945, he became Deputy Chief of Quartermaster, ETO. One year later, he was assigned as COFS, American Graves Registration Command, ETO and EUCOM. Graduating from the Industrial College of the Armed Forces in 1948, he became Chief, Procurement Division and Office of Procurement Methods of the Munitions Board.

Lieutenant Colonel Richard W. Whitney has been an instructor at the C&GSC since 1948. The MILITARY REVIEW published his article "Let's Assume" in July 1950, an issue which also contained a biographical sketch of him.

Lieutenant Colonel Frank E. Stevenson graduated from the C&GSC in 1950, and was then assigned as an instructor at the College. During WW II, he served in the 106th Engr C Bn, 31st Inf Div. In 1943, he activated and commanded the 244th Engr C Bn. One year later, he became executive officer of the 1123d Engr C Gp, serving with this unit until October 1945. In March 1945, he joined the 501st Engr Const Gp in the Marbo Command, Guam, serving successively as executive officer and then commander.

Lieutenant Colonel Robert E. Coffin landed with the 3d Inf Div in North Africa in 1942. During the preparation for the Sicilian operation, he joined the Artillery Section, Seventh Army, with whom he served in Sicily, Italy, Southern France, and Germany. In December 1945, he was ordered to the Intelligence Division, WDGS, until assigned as a student to the C&GSC in 1949. He has been an instructor at the College since 1950.

Lieutenant Colonel Delbert L. Bjork participated during WW II in many amphibious operations. The first part of his article "Waterborne Envelopments" appeared in the February 1951 issue of the MILITARY REVIEW together with his brief biography.

National Security and Freedom in Higher Education

The Viewpoint of the Military

Brigadier General Arthur G. Trudeau, USA
Deputy Commander, Army War College



This paper was presented at a symposium held by the Department of Higher Education of the National Education Association in St. Louis, Missouri, in July 1950. The MILITARY REVIEW is happy to bring this timely and important document to the attention of its readers.—The Editor.

IT IS a very great pleasure for me to be here as a representative of the Secretary of Defense. The Department of Defense appreciates very much the invitation to have a representative at this conference, as we believe it evidences both your concern and your interest in the vital part played by your National Defense establishment today.

The remarks I am to present are my own, and no official in the Department of Defense has had an opportunity to pass on whether or not they represent the official viewpoint. Nevertheless, based on an extensive acquaintance with many of the leading officers in the Department of Defense, I believe I can say that a consensus among these officers would support the views I shall present before this meeting. I would like to say, further, that while I am honored to stand beside an outstanding

scientist [Philip N. Powers, Adviser on Scientific Personnel to the U.S. Atomic Energy Commission] and an outstanding educator [Alonzo F. Myers, Chairman of the Department of Higher Education, College of Education, New York University] in making this presentation today, I am humble as regards my own ability to make any substantial contribution to this group of leading educators.

Your executive secretary, in his letter of invitation, expressed to me the hope that I would define national security. This is a large order. I would say that national security involves attitudes and actions on our part to insure the protection of our homes, our country, our institutions, and our aims from destruction by any source, foreign or domestic. It means maintaining the Nation in a status that insures our ability to defend our moral, social, economic, and political concepts and objectives against sudden destruction from either internal or external aggression. While we insist on the right to change these concepts through evolutionary processes, we also insist that the state must remain the servant of the people. While we desire to live in harmony with all the world, we refuse to stand by while all the facets in the jewel of western civilization

The importance of a technical and liberal arts education, and those who teach in these fields, is well recognized by the armed forces as having a direct influence on the development of both leadership and character

are subjected to the hammer of brutality, and the tender hopes for a peaceful and better world are cut down by the sickle of dialectic materialism called communism.

When our national aims are not threatened, the military force to protect them can be small. When they are threatened at every turn, as they are today, our armed strength must be such as to deter an enemy from the use of force.

To understand the need for national security, the long and continuously announced objective of world domination by communism must be recognized. The brutal subjugation of her own and satellite peoples, and the diversion of practically all resources and industry for war purposes, must also be understood. The suppression of the Christian faith, and the insidious penetrating tactics against the immature, the dissatisfied, and the young of all non-Communist peoples, must be recognized.

The import of the domination of most of the world's untouched resources, and the present stranglehold on more than one-half of the world's population, must be understood. The age-long desire for the markets, ports, the power centers, and the technical and industrial "know-how" of Western Europe must be remembered.

In other words, the Communist world is a direct threat to us from both the ideological and material standpoint. Without arguing about which is the cart and which is the horse, it must be apparent that civilization and trade have gone hand-in-hand for 5,000 years.

We would be naive, indeed, if we thought that we could remain confined to our continental limits while the rest of this world is Communist-controlled in mind and matter, and continue to secure the blessings of liberty of mind and body and the material comforts we have acquired. Such great gifts must be nurtured and defended. Freedom of any sort is a

privilege that can only be preserved by a corresponding acceptance of related responsibilities. Only by being worthy of it in conscience, in intellect, and in action can we hope to retain it. For the Nation and its aims and ideals, this means the offensive on the moral, psychological, political, and economic fronts, and a firm military posture that gives us a better than even chance of survival.

By the same token, freedom in higher education implies an acceptance of responsibility on the part of the teacher beyond the scope of any particular subject. The spiritual and intellectual talents of young Americans, or old, cannot be developed by a mere exposure to books or demagogic lectures. Without positive efforts on the part of spiritual and intellectual leaders of great capacity, we shall fail by the continued weakening of our character at a time when it must be strengthened.

While much of our higher education is geared to meet the capabilities of the average mentality (rather than the highest), nevertheless, the instructor of high attainments makes a life-long imprint on his students, most particularly—and fortunately—on those whose superior intellects give them the capacity to recognize greatness of soul and mind or talent and genius, in a special field of endeavor. These outstanding youngsters with character, brains, and great leadership potential must be our leaders tomorrow.

We must never forget that the blood of Oxford and Cambridge, Eton and Harrow, while no more precious to its owners than any other individual's, was spilled so generously on the battlefields of France in World War I that England and the Empire never recovered in the next generation or since. Suppose Churchill had been killed in the Boer War. Would there have been another Englishman of as great stature to carry the burden of his country's battle through its two greatest

crises? It can be said that a reasonable doubt exists on this point, since no one of the generations succeeding Mr. Churchill was able to fill his shoes in any degree during World War II; nor is that successor yet on the scene in the British Empire.

If it is not enough to consider the English situation, let us not forget that France has never recovered from the Napoleonic Wars, and the loss of her prime manhood in the nineteenth century. In no political crisis since World War I has she produced a truly outstanding leader. The few she has today are all elderly men with few outstanding younger candidates to replace them.

Not only in France and Britain, however, can such conditions arise. The price of war is always the shedding of much of the best blood of the nation. This has been true in our own country where the blood of our best youth has borne a heavy share of the loss. The stouthearted always lead the attack. The keen in mind are often the best in spirit, and it is this group who combine the best qualities of man that volunteer and provide the leadership for and carry the burden of the great mass of men. While the burden of war must be distributed to all elements of the population, we should never forget that the long-range view requires the protection of some reasonable proportion of our leadership potential for the next decade and generation. Our abrupt withdrawal of ninety thousand selected Americans of high intellect from our campuses in 1944, for early service elsewhere, might have been equally disastrous to us now and in the coming generation, had this War continued over a long period of time with resultant high losses.

One of the principles of Communist control has always been to eliminate any natural leaders who are hostile to their tenets. You may be sure that communism not only carries this to the elimination

of any of those who oppose their principles within their boundaries, but would also use it to destroy our leaders in all fields if they ever secure the opportunity.

A second important policy has always been for Fascist or Communist dominated countries to develop young leaders of high intellect, who will willingly accept the principles of the doctrine being perpetrated. This is easy to accomplish where the people are the servant of the state. Russia, like Germany before her, recognizes the need for selecting such individuals at an early age, so that those with the highest intellectual and physical qualifications can be developed as leaders throughout their entire lifetime, both in military and civilian pursuits.

The importance of a technical education in this increasingly complex world with its accelerated scientific and technological progress is well recognized by the armed forces. Many hundreds of our young officers enter our colleges each year for advanced education in these phases. All thinking persons in uniform are impressed with the necessity for improving selection and opportunities for outstanding intellects, hoping that their resultant efforts can be devoted to the good of mankind and not his destruction, but determined to keep the Nation safe if need be. A second hand at poker or war is still no good, no matter how much you bet on it. It will take all our brains to win.

The military are interested not only in the technical and scientific fields, however. Even with all the great values found therein, our cultural development and balance require an accent on the great importance of liberal education, also. A liberal education develops leadership in a very special way. Broad at its base and stimulating to both mind and spirit, it promotes adjustment to the present but preserves initiative and incites curiosity as to the future.

Under good instructors, it develops good

citizens, many of whom are and will continue to become leaders in their selected fields. For some students, it provides the last opportunity for developing a sound character, so frequently aborted or retarded by maladjustments or lack of adequate home life and parental attention in earlier years. I do believe that failure in higher education to assert the moral and spiritual values of Christianity as a basic tenet of our western civilization, violates the intended meaning of the word "freedom" just as much as would the endorsement of the Marxian theory called communism.

No—we must never restrict true freedom in higher education. We must do more to insure that our best young minds secure such an education. We must try to encourage our secondary schools to assist in such selection and in improvement in curricula. We must interest all Americans in the necessity for making the educational field so attractive that the men and women in it are the leaders in spirit and intellect today if we are to trust them to make our sons the leaders of the Nation tomorrow.

While freedom to think and learn must be secure, your responsibility to stimulate such thinking into exploration of ALL the facets and ramifications of the problem under study by your students is a serious one. Theory and idealism are not sufficient. The realities of life and the practical limitations in applying theories should be laid bare before the students. We live in neither a vacuum nor a glass cage, and the human limitations in our search for perfection must be understood. Only by such guidance can sound conclusions be reached. Any other approach results frequently in warped and biased

conclusions. Then we reach the point where little or limited knowledge is a dangerous thing. Being conscious of this at the Army War College, we avoid assiduously any direction which forces or indicates a particular solution. We issue no approved solutions. We are meticulous, however, in assuring that all facts bearing on the problem are considered and evaluated before our students are asked for plans or solutions.

In conclusion, I would state that the security and advancement of the Nation rest on an educated and informed citizenry who understand the basic interest that motivate men, individually or collectively. Only then can they correlate objectively the complex moral, social, psychological, economic, and political factors that determine the American way of life.

What greater challenge can there be to you who guide our youth through their critical college years, particularly in these critical times when the very foundations of our civilization and of our Nation are being assaulted by insidious and alien efforts of the greatest magnitude? Tell them the true meaning of their country and the great merits of the American way of life and western civilization. Don't permit them to be confused by the destructive criticism so common today where our faults are magnified almost to the exclusion of our virtues. May your contribution toward this end be so great that the vigorous and concerted policies of a well-informed nation, backed by a firm military posture adequate at all times to prevent sudden disaster, will insure the continued greatness and security of our country and re-establish friendly international relations which we so sincerely desire throughout this wonderful, but dangerous, world.

Scientific and Technical Exploitation

Lieutenant Colonel Andrew J. Boyle, *Armor*
Instructor, Command and General Staff College

WORLD War II saw the fighting man dependent as never before upon the ability of the home front to produce the implements of war. Early in the struggle it became evident that, to a large extent, the outcome would be decided in favor of the nation capable of producing the most, the best, and the most modern weapons and supplies. This capacity for production was in direct proportion to the wealth of natural resources, and to the scientific, technical, and industrial "know-how" possessed by the belligerents. It was this capacity which produced, among other things, the vast quantities of supplies of all types, the substitutes for scarce materials, the long-range bombers, the "V" weapons, and the atom bomb.

It was only natural that upon the cessation of hostilities, the victors should exploit the scientific, technical, and industrial knowledge of the vanquished. The motives for this exploitation varied with the nations concerned; some considered it a form of reparations, others as a means of assisting in overcoming the ravages of war, and still others as a short-cut to the preparations for the next major conflict. The purpose of this article is to discuss how the United States made available to

its citizens, after the War, the scientific, technical, and industrial information which existed in Germany. In many respects, this was a new problem. Mistakes were made, but the mission was accomplished. This is, therefore, not *the* solution but *a* solution and is offered in the hope that it may be of assistance to future planners.

The Problem

By the time the War in Europe was terminated, the value of the scientific, technical, and industrial knowledge in Germany had become apparent. United States industry and science had received samples of this information through efforts of various wartime field agencies. Appetites had been whetted and more knowledge was desired. It was realized that Germany had made great strides in scientific and technical fields during the war years and that our search, up to this time, for concrete evidence of such progress had barely scratched the surface. The pressure exerted from many sources culminated in an Executive Order stating that, within the limits of security considerations, the "secrets" of German technological and scientific achievements would be made available to the American

The scientific, technical, and industrial advantages which resulted from the operations of FIAT are additional reasons why combat soldiers should not willfully destroy captured enemy industrial facilities

public. This meant that all sources of scientific, technical, and industrial information, within Germany, would have to be explored and the results evaluated, correlated, and disseminated in a readily usable form.

Organization Within the United States

It was obvious that, to accomplish this task, an organization with operating agencies in both the United States and Germany was required. Accordingly, by Executive Order, the President created the "Publications Board." This Board, which consisted of the Secretaries of State, War, Navy, Commerce, and the Attorney General, was charged with the over-all responsibility for the project. The actual working agencies were the Office of Technical Services in the Department of Commerce and the Joint Intelligence Objective Agency (JIOA), a branch of the Joint Intelligence Committee under the Joint Chiefs of Staff.

The Department of Commerce was responsible for the dissemination of unclassified material within the United States, and for providing the operating agency in Germany with technical guidance, certain technical and administrative personnel, and with some supplies and equipment. The function of the JIOA was limited to the dissemination of all classified material and to ruling on all material whose classification was in doubt.

Organization of the Field Agency

The operating agency in Germany, known as the Field Information Agency Technical (FIAT), was organized during the closing days of Supreme Headquarters, Allied Expeditionary Forces (SHAEF), and formed a part of that headquarters. As such, it was a combined organization but so constituted that it could separate into its United States and British components upon the dissolution

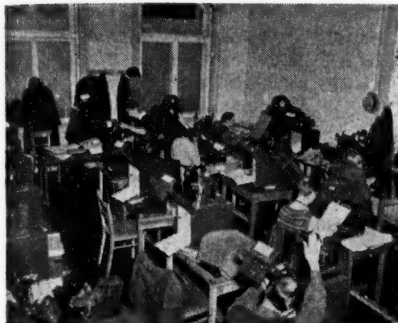
of SHAEF. Responsibility for the control, operation, and the major portion of the support of FIAT was assumed by the War Department.

During the period of organization, it was realized that the life of FIAT would transcend the period of combined command and pass into the occupation period, at which time the agency would operate under the Office of Military Government for Germany (US), (OMGUS). As a consequence, the Deputy Military Governor for Germany, who had arrived in the theater by that time, was kept fully informed of the activation of FIAT, and approved its organization, mission, and responsibilities.

The organization of FIAT was influenced, to a large extent, by experience gained during the War. FIAT was given control over all scientific, technical, and industrial investigations conducted in the United States zone of Germany. To accomplish this mission, it was provided with personnel for the collection, evaluation, correlation, and dissemination of information and with the administrative facilities necessary to support these operations.

To staff such an organization, personnel with certain particular backgrounds and training were required and it was necessary to tap all sources. As has been indicated, the Department of Commerce furnished many such persons directly from the United States. In addition, the scientific and technical personnel of the G2 Division of SHAEF were incorporated into FIAT, and the entire theater was combed for qualified individuals who could speak German, French, or Russian. Personnel who had served on the technical intelligence teams of the various technical services during the War were also secured.

In the creation and formation of any new organization, there usually is a need for alterations and changes as the situation, for which the organization is designed, develops. However, in the case of FIAT these were comparatively minor. The or-



Civilian employees of FIAT preparing abstracts of German documents in Karlsruhe.

ganization which finally crystallized and which functioned over the greater period of FIAT's existence is shown in the chart on page 11.

Sources of Information

The sources of information within Germany consisted, generally, of documents, personnel, installations, and matériel. It was necessary to exploit these both singly and collectively; the methods employed will be discussed in detail.

Documents.—The mission of FIAT, to secure and transmit to the United States all German documents which possessed significant scientific, technical, or industrial information, was a vast undertaking. Such documents were to be found in any number of locations and in various forms. For example, they were uncovered by advancing armies during the War and later moved to FIAT's place of business. Other documents were uncovered by FIAT investigators. These included secret patent applications from the German Patent Office, secret reports from the research committees of such concerns as I. G. Farben, lens formulae from the optical industry, and flow charts and engineering drawings from a myriad of other industrial enterprises.

Probably the simplest method of making these documents available in the United

States, once they had been located, would have been to box and ship them. However, two considerations precluded this. First, it was the policy of our Government to make Germany self-supporting as soon and as completely as possible; to have deprived her of these original documents would have retarded this effort materially. Second, it would have affected adversely other phases of the work of FIAT. For example, a FIAT investigator, writing his technical report on a particular subject, was as often dependent on German documents as he was on other sources of information. Consequently, a policy was established that all documents must remain *in situ*, and FIAT entered into the photographic business on a major scale. All selected documents had to be either micro-filmed or photographed and the resulting negatives developed and shipped to the United States.

In the first step of the document collection process, a list of "targets" was compiled showing the locations where documents of value were likely to be found. Some information about these potential



Mobile microfilming team photographing German scientific documents in Berlin.

"targets" was available in the FIAT files, but much was also gained from German ministerial records. The meticulous care with which the Nazi régime had catalogued and indexed all German industrial organizations and scientific institutions helped materially in this respect. Next, these "targets" were reconnoitered to ascertain whether documents of value actually existed. This, essentially, was a weeding out process in which a substantial number of specific "targets" ultimately were eliminated. Following this, highly trained personnel screened all documents in the remaining "targets" to determine their value to the United States. The personnel engaged in this activity were highly qualified. They were required to be well-versed in a particular technical or scientific field, to be abreast of corresponding developments in the United States, and to have a good working knowledge of the German language. In general, they were obtained by the Department of Commerce from the fields of industry and science in the United States. As can be imagined, there were never sufficient numbers of personnel of this type.

The documents, as finally selected, were microfilmed or photographed by mobile teams and the film returned to FIAT headquarters for developing. Following this, an English abstract, giving the salient points of each film, was made, and the film with its accompanying abstract was dispatched to the United States.

Personnel.—German personnel also contributed a considerable amount of scientific, technical, and industrial information. During the war years, many of the details of German scientific and technical advances were never committed to paper, and some of that which had been recorded was lost or destroyed. There remained, however, the possibility of obtaining this missing information directly from the individual Germans concerned.

Two approaches to this problem were

required depending upon whether the question involved fundamental or applied science. In the first case, dealings were with the scientist, and in the second case, with the engineer, technician, or industrialist. Generally speaking, the pure scientist is anxious to publish the results of his work and exchange information with other scientists, as is evidenced by the numerous scientific journals and their distribution throughout the world. On the other hand, industry has a tendency to retain the results of its studies, as exemplified by the deliberate concealment of its "know-how" and by a world-wide system of patents, trade marks, and copyrights.

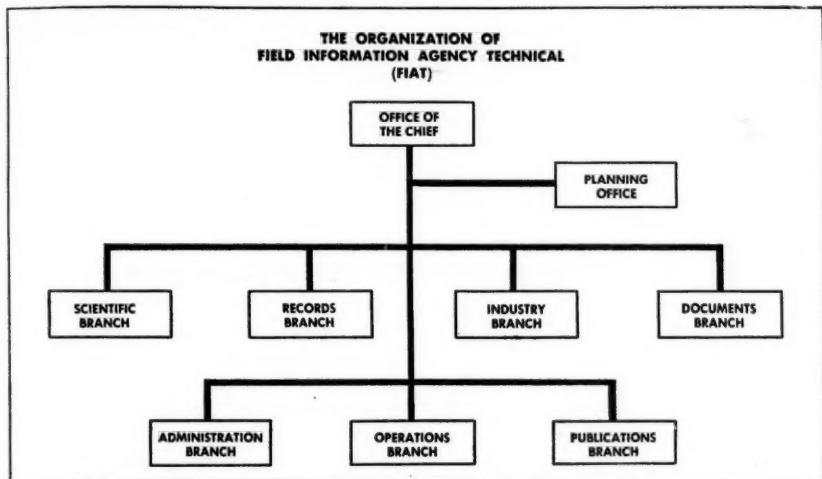
Since the early years of the War, German scientists had been denied the opportunity of exchanging information with other countries, and few scientific journals were published. As a result, the rest of the world was, generally, in ignorance of German scientific developments. FIAT was, therefore, given the mission of bridging this gap in our knowledge of the German achievements and advances made in the basic sciences. The effort received support from many scientific organizations including the American Chemical Society, the American Medical Association, and the UNESCO (an agency of the United Nations). It was obvious, from inception of the project, that the actual work would have to be done by the German scientists themselves, and that their co-operation was essential. After many meetings with the leading scientists in each field, their support was obtained and a satisfactory plan of operations was developed.

The sciences were broken down to the basic fields of mathematics, physics, chemistry, sciences of the earth, biology, and medicine. For each field, a leading German scientist was appointed as senior author. These men usually were world-renowned and several were Nobel prize winners. Each senior author was responsible for designating and monitoring others who were given the task of compiling, in book

form, the progress made in his portion of the field by German scientists during the war years. In accomplishing this, the authors of specific texts, such as the physics of solids, liquids, and gases; hydrodynamics and aerodynamics; and nuclear physics and cosmic rays, called upon other recognized authorities to contribute the

of the Reichsministry for Armament and War Production, was one of the persons who fell into this latter category.

Installations.—Installations, such as factories and laboratories, provided the best opportunity for an investigator to observe the methods and progress of German industry. It was sometimes found that a



various chapters needed to cover the entire field. The project culminated in a complete coverage of fundamental German science and became known as the *FIAT Review of German Science, 1939-1946*.

The situation with respect to technical and industrial information was somewhat different. Individual investigators were used to interrogate engineers and technicians in their factories and laboratories. Others, who were unemployed as a result of the War, and who were cleared politically, were hired by FIAT and put to work compiling information. Still others, who were politically questionable, were queried at their homes, or were brought to an interrogation and detention center operated by FIAT, where they were questioned by skilled interrogators. Albert Speer, Chief

factory, utilizing machinery and materials comparable to those in its United States counterpart, was employing superior or more efficient methods and "know-how." These opportunities for improving industrial processes in the United States were exploited.

Matériel.—German matériel of technical value to the United States ranged from small samples of a chemical compound, which could be air-mailed to the United States, to a pilot plant for the production of synthetic oil which required several Liberty ships for its transportation. The smaller items usually were purchased locally from the German economy. Machinery and equipment of a substantial monetary value were taken as part of United States reparations and, as such, were listed with

the Interallied Reparations Agency. Due to political and economic reasons, however, the shipment of large items of equipment ceased at an early date.

Relations with Allies

Since the United States was interested in a complete coverage of German science and industry, it was essential that FIAT investigators and microfilm teams have access to "targets" in the zones of Germany occupied by our Allies. FIAT, through its Operations Branch, secured clearances and made the necessary arrangements for United States personnel to operate in other occupation zones. In addition, it controlled the movements of all Allied technical investigators operating in the United States zone.

Upon the dissolution of SHAEF, the British portion of FIAT formed a FIAT (British) having substantially the same mission as that of FIAT (United States). The headquarters for the British FIAT remained in the United States zone, adjacent to the headquarters of its United States counterpart. Although the two FIATs operated unilaterally, there was the closest co-ordination and co-operation between the two organizations. Investigators moved without restriction between the two zones and there was a complete exchange of technical reports. The two units also worked in close harmony in producing the FIAT scientific reviews. Due to lack of funds, personnel, and equipment, the British did not participate in the document microfilming program, although United States microfilm and document personnel had access to all "targets" in the British occupation zone.

The French also formed a FIAT with headquarters in the French zone, and here, too, there was an exchange of liaison personnel with the United States organization. Cordial relations existed, and investigators from each nation had more or less free access to "targets" in the others' zones. Although there was no mutual exchange

of technical reports, the French collaborated with the United States and the British in the production of the FIAT scientific reviews.

Relations with the Russians were conducted strictly on a trading basis. FIAT (United States) would clear a team of Russian investigators to the United States zone only after the Russians had, in turn, cleared a United States team for investigation in the Russian zone. The number of times such agreements were consummated was limited. A considerable amount of negotiation was always in progress, but the results were never entirely satisfactory. Information pertaining to German industry and science in the Russian zone usually had to be obtained through other means.

Lessons Learned During FIAT Operations

The following lessons were learned from the operations of FIAT:

1. To be of value, information of a scientific, technical, and industrial nature must not only be collected but it must be evaluated, correlated, and disseminated.
2. Large numbers of highly trained personnel and much special equipment are required, and must be included in the planning for such operations, for obtaining this personnel and equipment, in quantity, will always be difficult.
3. In operations of this type, the closest co-operation between military and civilian personnel is essential.
4. Military personnel in charge of such an undertaking must understand scientific and technical personnel and appreciate their problems.
5. The principal sources of information are documents, personnel, installations, and matériel. Detailed plans must be made for the exploitation of each of these sources.
6. To operate efficiently, an organization such as FIAT must be provided or-

ganically with the equipment necessary to accomplish its mission, to include transportation and the means of publishing its findings.

7. Participation by Allies must be expected and encouraged; closest co-ordination and liaison must be maintained.

8. The over-all success of the organization will depend, to a large extent, on administrative planning.

9. Strong centralized control must be exercised, to minimize undesirable duplication and competition.

10. A greater degree of co-operation must be expected from the scientists than from technicians or industrialists of a vanquished country.

11. The records and files of the defeated government can be of considerable assistance in operational planning.

Conclusion

No effort has been made here to evaluate the over-all results of FIAT operations. One process alone, the *Croning*

process of mixing plastics with sand, has, more or less, revolutionized the foundry industry. The *Fischer-Tropsche Synthesis*, a process for the manufacture of so-called synthetic oils, is of incalculable value from a war-potential viewpoint.

The only monetary evaluation of FIAT's operations available is one of Russian origin. Mr. Molotov, at a meeting of foreign ministers, based Russia's demand for 10 billion dollars in reparations from Germany on the claim that the United States had extracted, from Germany, that amount in the form of scientific, technical, and industrial knowledge. This, like most Russian claims, can be assumed to be highly exaggerated. In point of fact, the operations are entirely too recent and their implications are too involved to permit any such conclusion. However, valuable results unquestionably were obtained, and it is highly probable that similar operations of this type will be conducted in the future, with the military establishment being called upon to participate actively.

A healthy American economy is probably the one greatest deterrent to war today and the best guarantee of victory in case war should come. For peace, as always, is our goal—but strength is the basis of its achievement.

Secretary of the Army Frank Pace, Jr.

Some Accomplishments of Unification in the Field of Logistics

Colonel Alfred B. Denniston, *Quartermaster Corps*
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The views expressed in this article are the author's and not necessarily those of the Department of the Army, the Army War College, or the Command and General Staff College.

This is the first of a series of two articles on some of the accomplishments of unification in the field of logistics. The second article in this series will appear in the April issue.

—The Editor.

CONSIDERATION of the degree of integration desirable in the logistic support of the three services would be incomplete unless we first considered what has been accomplished in the way of unification or co-ordination in this field under present laws and policies. It is not my intention to plead the case for a Department of Logistics on one hand, or for three separate independent isolated logistic systems on the other hand. In all fairness, however, since we all have bias, I should state that on this subject I have two. It is my firm belief that unification is an evolutionary and not a revolutionary process, and that there is a middle ground between the two extremes mentioned. In spite of this, I will confine this article to a statement of the facts as I see them and make no effort to show that these facts point the way to any specific solution of this important problem.

Further, this discussion will not cover unification accomplishments in every subdivision of the logistic field, nor will it cover all the accomplishments in the subdivisions included. That there have been accomplishments in areas which have not come to my attention is beyond question. Since I am looking at the unification process from the viewpoint of the level of the Department of Defense, I know that there have been many unification accomplishments that have not yet, and in some cases never will, come officially to the attention of officials at that level. Many instances of agreements reached, and common policies established, among field and departmental representatives of the Army, Navy, and Air Force, without benefit of the unification agencies of the Secretary of Defense, have come to my attention. Such accomplishments were deplored, in some circles, apparently on the basis that unification is good only when sponsored by the overhead agencies set up for that purpose. On the other hand, there are many of us who felt that the kind of unification worked out by the pick and shovel echelons was far more likely to be permanent than that imposed from above. As one very sound authority stated, "True worship can take place outside of the temple."

Another little stressed point which should be kept in mind is that unification

did not start with the passage of The National Security Act of 1947, but is a process which has been developing over many years. In the field of logistics alone, this process received great impetus during and immediately after World War II. Two examples in the procurement area will illustrate this fact. Responsibility for the purchase of foodstuffs for the Army and Navy was assigned to the Army in 1942 by agreement between the Secretaries of War and Navy. The highly successful Armed Services Medical Purchasing Agency was started in the fall of 1945.

In the preceding paragraphs I have attempted to raise a backdrop against which we can look objectively at the accomplishments of unification in the logistics field. What measurable accomplishments can we observe? The areas at which we shall look are:

1. Procurement.
2. Standardization.
3. Cataloging.
4. Finance.
5. Distribution.
6. Transportation.
7. Industrial mobilization.

The one broad and, to my mind, most important accomplishment is not restricted to any one of these areas or even to the field of logistics. It is the better acquaintanceship among Army, Navy, and Air Force personnel and the resultant better understanding of each other and of each other's problems which has re-

sulted from the unification process. This is not a new development resulting from The National Security Act of 1947 or even from the expanded Army-Navy contacts of World War II. It is true, however, that Army-Navy co-operation in

World War II increased greatly this understanding and mutual confidence. It is likewise true, that the efforts of personnel of the three departments to evolve, during the past 3 years, a Department of Defense supply system which will be efficient, economical, and responsive to command has added immeasurably to the mutual respect and understanding among personnel of the Army, Navy, and Air Force. The present co-operation among the senior logistical officers of the three departments is splendid, but I am certain that when the Lieutenant Commanders and Majors, and the Lieutenant Colonels and Commanders of the three services who are, at present, working together sit around the conference table as flag and general officers, mutually agreeable solutions which evade us now will be found.

Procurement

The procurement area provides more measurable accomplishments in the elimination of needless overlapping and duplication among the three departments than any other area in the logistics field. This is due to the nature of the operation and to the fact that excellent progress has been made in the co-ordination of procurement prior to the passage of The National Security Act of 1947. The Army Ordnance Corps has bought or manufactured and, for that matter, designed, developed, tested, stocked, and issued hand and shoulder weapons and am-

Integration in the Armed Services existed prior to the passage of The National Security Act of 1947. Progress made since then, while not spectacular, is sound and reflects credit on the Department of Defense

sulted from the unification process. This is not a new development resulting from The National Security Act of 1947 or even from the expanded Army-Navy contacts of World War II. It is true, however, that Army-Navy co-operation in

munition for the Navy (including the Marines) and the Air Force for many years. The Army Quartermaster Corps has been purchasing the foodstuffs for the Navy since 1942. The Armed Services Medical Purchasing Agency, or its prede-

cessor agency, has been buying the medical supplies and equipment for all the military services since 1945. This trend toward co-ordinated purchasing has been accelerated decidedly since 1947 under the leadership of the Munitions Board in accordance with the provisions of The National Security Act of 1947. That Act states, in part, "... It shall be the duty of the Board under the direction of the Secretary of Defense and in support of strategic and logistic plans prepared by the Joint Chiefs of Staff. . . .

* * * * *

"(3) To recommend assignment of procurement responsibilities among the several military services and to plan . . . for the greatest practicable allocation of purchase authority of technical equipment and common use items on the basis of single procurement."

Methods of Procurement

The Munitions Board reported, on 1 August 1950, that, based on the procurement pattern for fiscal year 1949, determination as to the best method of purchasing had been made on 97.6 percent of the current fiscal year supply budget. This figure will vary slightly, from year to year, due to the changing procurement pattern. In order to understand the meaning of this figure, we must turn back to a Munitions Board decision of early 1948 interpreting single procurement. This decision was approved by the Secretary of Defense and forwarded to the Armed Services Committee of the House of Representatives who accepted it without adverse comment. This decision was that several forms of co-ordinated purchasing complied with the letter and spirit of the law and promised to provide the most effective and economical purchasing operations. These forms of purchasing are:

1. Single department purchasing, in which one department purchases the

total Department of Defense requirements of a commodity group. The Air Force purchases all photographic equipment and supplies, the Navy all hand tools, and the Army all foodstuffs for the three departments.

2. Joint purchasing, in which a jointly staffed and operated agency purchases the requirements of a commodity group for the three departments. The Armed Services Medical Purchasing Agency purchases all medical equipment and supplies and the Armed Services Petroleum Purchasing Agency purchases all petroleum products for the three departments.

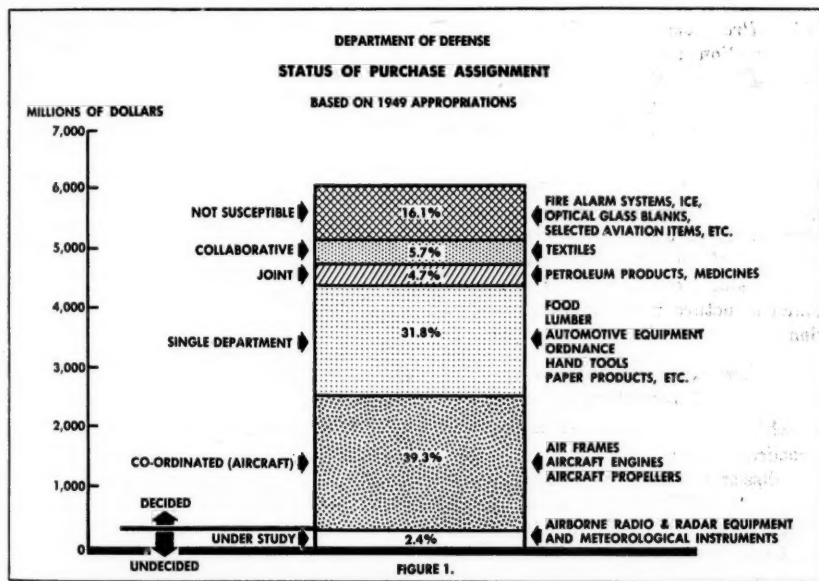
3. Co-ordinated purchasing (aircraft) is single department purchasing on a plant basis rather than on a commodity basis. The plants producing airframes, engines, and propellers have been divided between the Navy and Air Force on the basis of major interest. The Navy makes the purchases, for itself and the Air Force, from the plants assigned to it. The Air Force does all the buying from the plants assigned to it. For example, the Air Force contracts for all the service requirements for engines produced by the Wright Aeronautical Corporation and the Navy for those produced by the Pratt and Whitney Company.

4. Collaborative purchasing, in which the purchasing offices of the departments are located together though each actually makes its own purchasing arrangements. Co-ordination and co-operation is required to avoid needless overlapping and duplication. The entire textile (and some related commodity) purchasing for the three departments is accomplished at one location in New York City.

In inserting the words, "... for the greatest practicable allocation of purchase authority . . .," the Congress wisely left the door open to avoid uneconomical and unworkable purchase assignments. In a series of decisions, the Munitions Board has ruled against mak-

ing purchase assignments for certain commodities and selected items. Under the criteria stated above, these exceptions amount to a monetary value of 16.1 percent of the current supply budget. There remain under study and not yet assigned, nor determined to be unsusceptible to assignment, a few highly technical and specialized commodities. These

ment process which has been the subject of many charges, on the grounds of useless overlapping and duplication among the three departments, is inspection. It must be borne in mind when analyzing these charges, most of which come from the producers of products being inspected, that any inspection is distasteful to the producer. He really believes that inspec-



account for 2.4 percent of the dollar volume of procurement. The status of purchase assignment, as of 1 August 1950, is shown in Figure 1. It should be noted that the recent major increases in the Department of Defense and Mutual Defense Assistance Program budgets may cause considerable change in these percentages depending on the resultant procurement pattern changes.

Inspection

An important element of the procure-

tion is a waste of time for "he would not ship the item if it was not right." Inspection by two or more departments is bad only when the cost of the product is increased or the efficiency of the plant is lowered thereby. It is not harmful just because the Army, the Navy, and the Air Force each have an inspector in the same plant.

Progress has been made in the elimination of duplicate inspection services. The Navy Inspection Service inspects all the products bought by the previously men-

tioned Armed Services Medical Purchasing Agency. Inspection by one service for all three has been achieved in a number of individual plants.

Equally important progress has been made in developing uniform inspection standards and procedures. A Department of Defense gage inspection manual and a gage design manual have been prepared and have been, or shortly will be, published. Section XIV, "Inspection," *Armed Services Procurement Regulation* is nearing completion and probably will have been published by the time this article is printed. A standard inspection and acceptance form has been developed and is under review.

Summarizing progress in this area, it might be said that end-product accomplishments have been rather meager. A great deal of the foundation work has been done and it must be remembered that a sound structure requires a sound foundation.

Dissemination of Purchasing Information

A valuable accomplishment in the area of procurement has been the improvement in the dissemination of purchasing information, and the co-ordination of this effort among the three departments. At the same time, the three departments have put into effect a unified and positive approach to the problem of "small business" participation. The plan was in the making prior to the Hoey Committee investigation of the so-called "five percenters," but its implementation was expedited remarkably by the activities of that Committee. The problems of dissemination of purchasing information and "small business" participation in defense contracts are, in reality, one problem and have been so treated.

The first step in the solution was the establishment, by the Secretary of Defense, of the Central Military Procure-

ment Information Office under the direction of the chairman of the Munitions Board. This Office was staffed by a major of the Women's Air Force, a captain of the Women's Army Corps, and a lieutenant (j.g.) of the USN (W). The Office does not assist businessmen to obtain contracts but does try to direct them to the proper purchasing office, technical service, bureau, or command of the three departments where their problems can be handled. The establishment of this office was advertised widely as the answer to those who claimed that a "five percenter" was necessary for guidance through the maze of military procurement. After 9 months of operation, this Office had assisted 2,200 businessmen through personal interviews, 4,700 through correspondence, and more than 13,000 through telephone interviews. As a result of the increased tempo of military procurement, it has been necessary to increase the staff of this Office from three to six officers.

The next step in the unified program of acquainting the business world with what the military was buying, plus the when and where, was the appointment, in all echelons of military procurement, of Small Business Liaison Officials. Recognizing that "small business," while perhaps more articulate, was less well represented in Washington than other businesses, the Munitions Board established its Small Business Office to be the focal point for "small business" men in their efforts to participate in military procurement, and to assist the then Assistant Secretary of Defense (Paul H. Griffith), in the discharge of his duties as special assistant to the Secretary for "small business" matters.

Another step, in the field of acquainting all business enterprises with military procurement matters, is by far the most important and far reaching. Each of the 55 major Army, Navy, Air Force, and joint procurement agencies prepare daily a syn-

opsis of the invitations to bid which were approved that day. This information is teletyped, each day, directly to the Department of Commerce Administrative Office in Chicago, where it is consolidated, reproduced, and distributed promptly to more than 3,000 separate geographical locations. It is then made available to all businessmen. The outlets in these locations are offices of the United States Department of Commerce, state departments of commerce, state employment agencies, chambers of commerce, and manufacturers' associations. It might be well to note, at this point, that this operation shows a unified approach not only by the Army, Navy, and Air Force, but also by the Department of Commerce and the General Services Administration as well. This program was initiated on 1 March 1950. On 1 July 1950, a weekly synopsis of awards of unclassified negotiated and formally advertised contracts, in the amount of \$25,000 or more, was initiated by the 55 major procurement agencies and submitted directly to the Department of Commerce Office in Chicago. These synopses are made available weekly through the same outlets as are the daily consolidations. Many businessmen, interested in subcontracts, consider this latter information more valuable than the information on what is being bought.

Supplementing the distribution of procurement information described above, the Munitions Board Small Business Office sponsored meetings, all over the country, at which Army, Navy, Air Force, and Federal Supply Service procurement personnel explained the intricacies of federal procurement to all businessmen who wished to attend.

Unified Procurement Legislation

Prior to the enactment of the Armed Services Procurement Act of 1947 (Public Law 413, 80th Congress), passed on 19 February 1948, and made effective on

19 May 1948, the military departments procured under a framework of almost a century's accumulation of statutes. Coordination, or even the evolving of similar methods of procurement, let alone unification of it, was difficult because of conflicting basic laws governing it in the military departments. Naturally, and of necessity, each department had developed regulations governing its procurement in accordance with the laws by which it was bound.

The first achievement in this area, and perhaps the finest, was the *united* effort, spark-plugged by an Assistant Secretary of the Navy, which developed and worked through the Congress a procurement law entirely satisfactory to all three departments. This law, passed on 19 February 1948, probably has imperfections. It is noteworthy, however, that after 2 years of operation under its provisions, there have been no suggestions for revising it. Further, on the recommendation of the "Hoover Commission," the Congress passed Public Law 152, 81st Congress, which gave the civil agencies of the Government substantially the same procurement procedures as did Public Law 413 for the military agencies.

The enactment of Public Law 413 allowed the three military departments but 3 months to develop and publish suitable common basic procurement regulations. On 19 May 1948, there were published, over the signatures of the Assistant Secretary of the Army, Assistant Secretary of the Navy, and Under Secretary of the Air Force, the first six sections of the *Armed Services Procurement Regulation*. Since then, Part 1 of Section VII, and Sections IX, X, XI, XII, and XV have been published and distributed. In addition, based on experiences achieved, a general revision of those sections already published has been distributed. Part 2 of Section VII was nearing completion on 30 June 1950 and may have been published

by now. The remaining sections are scheduled for completion as follows:

Section VIII, 30 December 1950.

Section XIII, 30 October 1950.

Section XIV, 30 March 1951.

Section XVI, 30 December 1950.

It is planned to publish a total of 16 sections. The development of these regulations required not merely the co-operation of the three military departments but consultation with various industrial and business groups, co-ordination with the General Accounting Office, and, since the passage of Public Law 152, co-ordination with the General Service Administration.

I have recited a number of unification accomplishments in the field of procurement. In order to retain the objective point of view it is proper at this point to ask a question. Are all of these fine accomplishments to be taken at face value? The answer is no. They are fine as far as they go but in few cases can they be considered to be 100 percent effective. In the purchase assignment area, there has been considerable buying in violation of assignments made. Some of this has been done through misunderstandings, some because of real emergencies, and, doubtless, some in deliberate violation of instructions. In general, where assignments have been complied with completely, there is still needless duplication in contract administration and in arrangements for transportation. In the area of information dissemination, I believe we now have, or shortly will have, achieved the optimum degree of unification. The area of the procurement regulations can, at worst, be considered to be in the stage of satisfactory progress.

In pointing out that these excellent results of unification are not always all they appear to be on the surface, I do so, not to be critical, but, on the principle that we cannot evaluate the benefits gained, or determine what additional steps should be taken, unless we look objectively and honestly at the situation as it is.

Standardization

One of the least understood efforts in the unification process is that of standardization. Again, this effort did not start with the passage of The National Security Act of 1947. The predecessor agency of the Aeronautical Standards Group, for instance, originated in 1917. By the same token, the misunderstanding of standardization is not new but is of long standing and is deep rooted. An example of this misunderstanding is the published statement of the president of one of our great universities, that the Armed Services could save \$7,000,000 a year in the purchase of underwear if they would only standardize this product. What are the facts? They are: first, specifications for underwear have been standardized on all but the "long handled" variety; second, over the past few years, the combined underwear purchases of the Army, Navy, and Air Force have averaged \$17,000,000 a year. I do not believe that I will be guilty of overstatement if I say that nothing short of the bottom falling out of the cotton and wool market, and the advent of phenomenal advances in production efficiency, will take \$7,000,000 off of our military underwear bill. Other equally unrealistic claims of the potential benefits of standardization have been made. On the other hand, there are those who claim that standardization will stifle development, and that we would standardize on the least effective, not to say the obsolete models. The answer to both claims is the establishment of selective standardization in those fields in which standardization definitely will give us more security per dollar.

In spite of the beclouding of the issue, as indicated above, there has been progress in this field. The National Security Act of 1947 assigned to the Munitions Board the responsibility "... to plan for standardization of specifications. . . ." On 11 May 1948, the Munitions Board dis-

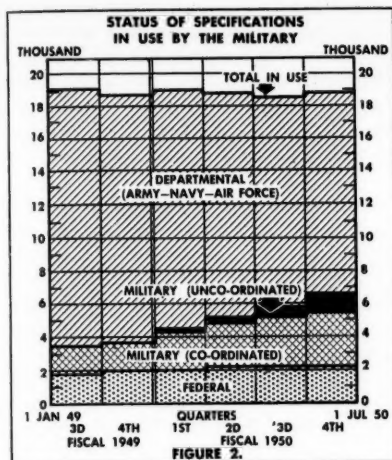


FIGURE 2.

solved the Army-Navy Joint Specifications Board and established the Munitions Board Standards Agency. This agency consists of a chief, an executive group, and an agency staff. Of this personnel, the chief and the agency staff are on this duty full time, and are responsible only to the Munitions Board. The executive group members are selected by the responsible Under or Assistant Secretaries of each department from among the departmental personnel assigned to standardization work. They continue on their departmental duties, giving the Standards Agency such time as its problems require. The chief is presently an Army officer. It is contemplated that this position will be rotated among the three departments. Co-ordination is maintained with the standardization efforts of the civilian agencies of the Federal Government, through the Federal Supply Service of the General Services Administration. The Standards Agency, while it is the co-ordinating office, is not the operating echelon in standardization work. The real development of specific standardization practices is accomplished in the bureaus, technical services, and commands of the three depart-

ments. Other co-ordinating groups which work under Standards Agency policies in this field are the Munitions Board Packaging Committee, the Inspection Agency, and the Aeronautical Standards Group.

In order to evaluate the progress in the area of standardization, it must be broken down into four parts. These parts are:

1. Specifications.
2. Military Standards.
3. Equipment Standardization.
4. Qualified Products Lists.

A *specification* is a clear and accurate description of the technical requirements for a material, an item, or service, including the procedure by which it can be determined that the requirements have been met satisfactorily.

A *military standard* is a description, in text or graphic form, of engineering or related practices approved for common use by the Army, Navy, and Air Force.

Equipment standardization is the adoption of the exactly same end item, for the same purpose, by the Army, Navy, and Air Force.

A *qualified products list* is a list of

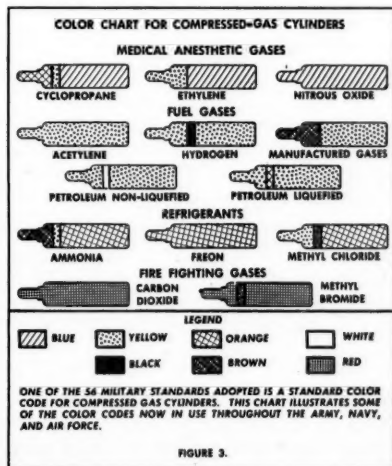


FIGURE 3.

products of one or more manufacturers which have been tested and conform, in all respects, with the military specification listed. This is, in effect, advance testing by one department for all three and saves time and money when procurement takes place.

I will try to sum up the measurable progress in the area of standardization in each of these four categories.

The Standards Agency developed and, on 2 June 1949, the Munitions Board approved for distribution, the *Manual of Policies and Procedures for Military Specifications*. This manual governs the specification work of all elements of the Department of Defense. On 1 January 1949, there were approximately 19,100 specifications in use in the Department of Defense. Their breakdown, by types, follows (see Figure 2):

1. Federal	1,900
2. Military	1,700
3. Departmental (Army, Navy, or Air Force)	15,500

On 1 July 1950, the total specifications in use had decreased to about 18,900, and their breakdown, by types, is also indicated in Figure 2.

1. Federal	1,900
2. Military	4,500
3. Departmental (Army, Navy, or Air Force)	12,300

The Standards Agency has approved for use by all three departments 56 military standards and 169 qualified products lists.

Equipment Standardization

I have no over-all figures on the progress being made in the most difficult category of all—equipment standardization. A few examples of what has been accomplished must suffice. The Air Force and the Navy have standardized on air speed indicators using nautical miles per hour data. In the field of electronics, 37,000 types of meters have been reduced to 3,700; 3,000 types of

radio tubes to 195; and 10,000 transformer case sizes to 22. In the field of clothing, a standard undershirt has been adopted. Clothing bags, socks, overshoes, identification tags, towels, pillows, and pillow cases have been standardized. The 24-volt electrical system has been adopted for use in all tactical vehicles.

This is not a complete list of standardized items but, in all candor, we must admit that even if we listed every item standardized the list would not be impressive. When cataloging is discussed, it will be seen that some additional progress has been made in this area because, in many cases, the entire military establishment uses the same item but names and numbers it differently. It would be wise, however, for the uninitiated to pause before charging the military departments with indifference, sabotage, or disobedience of the congressional mandate in the area of standardization. I will try, here, to enumerate a few of the difficulties, inherent to this problem, of which the most ardent "standardizers" may be in ignorance.

The first hurdle is to determine whether or not American industry has the capacity to produce the standardized item in sufficient quantity to meet the total military needs in wartime. A second hurdle is the quality factor. Is the quality required by each service, or even each element of a service, the same? There are many instances in which the specifications for an item, prepared by one service, indicate the need for the highest possible quality (expensive in critical materials, manpower, and production capacity), whereas this high quality would be wasted completely in meeting the requirements of the other services. A third hurdle is that of the quantities of plant equipment on hand and their replacement. Even presuming that the Navy's 5-inch or the Army's 155-mm gun is deemed superior for the purpose of the other service, can we, at this time, afford the initial high

cost of the change over in machine tools and other industrial equipment? The most important hurdle of all is that of effecting useful standardization without standardizing ourselves out of the best weapons and equipment that the American scientist-industry-military team is capable of producing.

The foregoing discussion is not offered

as an apology or excuse for lack of progress in the standardization field. We have not made the progress of which we are capable. There are indications, however, that our progress in this field will improve. On the other hand, we have made a great deal more progress than that with which the alarmist has credited us, and that progress has been sound.

Unification is slowly curing a great weakness that, in my judgment, could lead us to economic ruin—unguided, unreasoned spending based more on emotionalism than on wisdom.

General J. Lawton Collins

The military budget affects our national economy. In spending for defense, a three-way balance must be kept between the needs of the armed forces, aid to potential wartime allies, and the country's general economic health. The last factor is the real key to our continued security.

Officers' Call

Mobilizing Public Opinion

Lieutenant Colonel Richard W. Whitney, *Infantry*
Instructor, Command and General Staff College

The views expressed in this article are the author's and not necessarily those of the Department of the Army, the Army War College, or the Command and General Staff College.—The Editor.

STALKING at large over this broad land of ours is a hulking giant whose strength is prodigious. When displeased or bored, he has been known to destroy entire industries and to disrupt the plans of our Nation's leaders. At other times, this unpredictable titan has created new industries and caused them to prosper. More than once, his strong right arm has provided that extra measure of power which has enabled us to defeat our enemies. He is moody, fickle, excitable, gullible, but above all, independent and invincible when aroused. Once deceived, he is unforgiving and his revenge is terrifying. It is not surprising, therefore, that our Nation's industries, social organizations, and political parties, and the individuals who guide these enterprises pay daily tribute to this liege lord. This tribute amounts annually to many millions of dollars and many trillions of carefully chosen words. The name of this giant? Well, our social scientists call him Public Opinion. What a formidable enemy he can be, but what a stout fellow to have on our side!

So great are the influences and capabilities of public opinion that many of our leaders fear it while all of them respect it. Yet in spite of this, we have

failed to provide this giant with the fundamentals of a sound and thorough education. We have not provided him with the background he needs to act quickly and intelligently. Specifically, we have neglected his education in the important fields of foreign and military policy. In short, we have failed miserably to utilize one of the greatest resources which can be applied to the furtherance of our national aims.

How did this come about? Upon whose shoulders falls the blame? Is it the fault of our national press? No, the primary function of the press is to present the facts relating to daily occurrences. Certainly the press is capable of educating the public. Frequently, it attempts this subtle form of education when supporting or opposing announced domestic and foreign policies. But the usual public reaction, whether deserved or unjust, is that each publisher and editor has an axe to grind. Can we place the onus for this deficiency on our leaders or upon any governmental agency? Perhaps, but they are already being censured, deservedly or not, for all our national ailments, and, furthermore, it would be difficult to pin down the shirking of this responsibility to any one individual or group. Let us examine this delinquency, therefore, to see how it developed.

Educational Deficiencies

It is likely that the educational deficiencies of the American public in foreign and military affairs stem largely from three

sets of circumstances. First, the United States, within a comparatively brief period, has been forced out of its geographically and politically isolated haven and has accepted global interests and responsibilities. The public mind has not kept pace with this development either through lack of interest, failure to understand the implications of our new position, or a combination of both. On the other hand, the average European is an ardent and well-informed student of military and foreign affairs. The reason is obvious. Since time immemorial, he and his neighbors have lived constantly under a cloud of violent military and international political activity or the threat thereof. And so, a knowledge of the underlying causes for these activities is essential to his very existence.

The second condition contributing to our deficiency is a natural tendency in high places to place a security classification on much information and intelligence (*Information—the mere facts: Intelligence—the significance of those facts and the conclusions drawn therefrom*) which would better serve our national interests if it were also made available to the public. Plainly speaking, there are persons whose thought processes run in this fashion, "Someone might think this document should be classified so I'll just protect myself and stamp it SECRET now." Or, "It was marked CONFIDENTIAL when

policies. Obviously, this should not be the responsibility of one individual nor of several isolated individuals. No one can dispute the value of security. But there is much evidence to support the contention that a blind and ruthless application of security to information or intelligence can deprive us of much of its value.

Political and military scientists agree that the war potential of a totalitarian state is greatly enhanced by the ability of its leaders to take immediate and decisive action to implement foreign and domestic policies. Conversely, in a democracy, efforts to place strategic plans in effect are hampered by the necessity for submitting most major issues for debate before our legislative bodies, and by waiting for and evaluating public reaction to those plans. In this age of mobility and long-range, mass-destruction weapons, this alone could spell the difference between war at home or war abroad, a short war or a long war, ultimate victory or final defeat. We can no longer depend upon the time cushion we have enjoyed in the past because of our geographic isolation. Can this disparity in freedom of action be eliminated, either wholly or partially without jeopardizing the freedoms and privileges which are guaranteed by our preferred way of life? Our thesis is that it can, at least, be minimized by a carefully administered educational program.

The dissemination of accurate information concerning foreign and military affairs forms the basis for developing sound public opinion. The results: a united front providing a solid bulwark for national security

it arrived from Paris, so why should I go to the trouble of getting it downgraded?" It is difficult to find an individual endowed with the wisdom of a Solomon who will decide that the information contained in a report may provide the spark to ignite, and the heat to fuse, our public opinion in support of our Government's

Functions of OWI

The third circumstance contributing to our present unenviable condition is an inclination on the part of our national leaders to ignore the value and need of united public support except in time of war. During the late War, President Roosevelt created the Office of War Information

(OWI) under the competent direction of Mr. Elmer Davis. Mr. Davis expressed clearly the functions and purpose of this agency in the following extracts from his writings and public addresses:

Executive Order 9182, which established the OWI on June 13, 1942, defined as its primary purpose the facilitation of the development of an informed and intelligent understanding, at home and abroad, of the status and progress of the war effort, and of the war policies, activities, and aims of the Government.

OWI is a war agency, which owes its existence solely to the War, and was established to serve as one of the instruments by which the War will be won.

One of the most important divisions of our branch is a news service which takes its news from enemy sources and sets it in its proper relation to the facts of what is going on, with the background and any necessary correctives; so that the antidote comes along with the poison. To keep this news out of the country would be impossible and, in my opinion, unwise. We should enable the people to recognize that news or so-called news for what it is—a weapon of war which the enemy uses just as he uses air bombs on people who are closer to him than we are.

We intend to give the people as much material as we can to enable them to understand what is going on, and since that material is voluminous and often confusing, we shall, from time to time, issue a general survey of our own to try to tell the people how the total picture looks to us at the moment. It may be objected that such surveys are propaganda, directed against the American people and not against our enemies. Well, I repeat what I said about propaganda—that it is an instrument which may use truth or falsehood as its material, which may be directed toward worthy or unworthy ends. We are going to use the truth, and we are going to use it toward the end of winning the War.

For all the work of the domestic branch . . . we are spending not more than half as much money as one American company has spent annually to inform the American public about a single product and the company spent that money because it expected a profit. So do we expect a profit for the American people who are asked to pay for our activities—a profit that will take the form of a clearer understanding, a closer unity, a heightened national resolution, and in consequence, a speedier victory.

An agency comparable to the OWI, called the Committee on Public Information, was created for somewhat the same purpose during World War I and when victory was assured, was inactivated. As a result of these actions, this question becomes unavoidable and must be an-

swered: By what line of reasoning have we concluded that a "clearer understanding, a closer unity, and a heightened national resolution" are necessary only when our country is at war? The abolishment of these agencies at the termination of hostilities points to a general acceptance of that conclusion. But the hard, cold, and undeniable fact remains that public opinion is a weapon for peace as well as a weapon for war.

All foreign powers make a continuous study of American public opinion. Is it not likely that a strong and united public opinion would discourage a hostile move against our interests? By the same token, would not a weak or divided public opinion constitute an inviting gap in our Nation's defenses?

Let us attempt now to spike the guns of those whose noses begin to twitch when the word *propaganda* is mentioned. The term is distasteful in relating it to the education of our own people. Its more familiar usage is concerned with the spreading of a doctrine; the imposing of one's will upon another by means of the written or spoken word; or the reduction of another's will to resist. What our situation requires is a strengthening and uniting of American public opinion by providing the public with the basis upon which to form rapidly a sound opinion. This can be done by giving them the truth, the whole truth, and the significance thereof, all in its simplest form. We must continue to allow the public to form its own opinion and to make its own decisions, but it is incumbent upon us to provide the public with the facts which will make its opinions logical and its decisions sound.

Mobilization of Public Opinion

Events during the past 5 years have repeatedly proved the need for a mobilized, educated, and united public opinion on foreign and military affairs. Let us examine one instance, the "selling" of the

Truman Doctrine to the people of this country. During the winter of 1946-47, the democratic world became increasingly alarmed over the success of Communist gains in the Balkans. A particular source of worry came from Communist guerrilla encroachments upon Greece.

Aid to Greece

In February 1947, the British made known their inability to continue to aid the Greek National Government without financial and matériel assistance from the United States. On 12 March 1947, the President of the United States, in an address to Congress, announced the Truman Doctrine and called for an appropriation of 400 million dollars to supply military and economic aid to Greece and Turkey. This proposal, unprecedented and unheralded, stunned an unsuspecting Congress and an unprepared public. Were they convinced that aid should be provided to all nations who were threatened by totalitarian aggression? Far from it. The reaction of many, and this number included men and women in all walks of life, was: "Why should we go into Greece to pull the British chestnuts out of the fire?" This opinion was not due to the fact that the public did not think through the problem and the solution presented by the President. It was simply that the facts pertaining to the matter had not been presented properly, in advance, to the public. It also proved that, in a country where advertising and publicity experts abound, we have ignored the techniques necessary to present matters of national and international importance to the public.

There was a need for speed in dispatching the assistance to Greece and while the President, the State Department, and the military services waited, Congress, influenced by public opinion, debated the feasibility of such a measure. Why the need for speed? For good and sufficient reasons, but most of them bore a security classi-

fication. Therefore, it wasn't until 22 May 1947, that the act was presented to the President for his signature. Can we always afford such a delay without courting disaster? Not if we hope to preserve our national security.

Suggested Remedies

These very factors which have contributed so largely to the disunity, evasiveness, and irresolution of American public opinion on foreign and military matters point to the necessary remedial action. Briefly, this action consists of a threefold task. First, an aggressive and understandable nation-wide program of education in the fundamentals of current foreign and military affairs must be initiated. Second, measures must be taken to screen the daily influx of information and intelligence to determine what is right and proper for the public to know, consistent with sound security procedures. This information should be disseminated in the form of facts, to include their significance, and, when practicable, should indicate the course of action our Government must follow in relation to the conclusions derived from these facts. Third, a plan must be instituted for co-ordinating the public statements of our Nation's policy-makers in order to prevent ill-advised or contradictory utterances concerning the policies, plans, and activities of our Government.

The basic factors which have an adverse effect upon public opinion are:

1. Lack of adequate information.
2. Misinformation.
3. Confusion resulting from too much or contradictory information.
4. Ignorance.
5. Prejudice.

Proposed Educational Program

The proposed program of education would be directed toward the neutralization of the last two of these factors. Let

us consider this educational program in terms as simple and understandable as must be the program itself. At present, our foreign policy is directed toward stemming the tide of communism. Our military forces are committed to action in the execution of this policy. Now, what does the public know about communism? Ask 10 people, selected at random, to explain the doctrines of communism and to state its ultimate goal. Rarely will an accurate answer be obtained. Ask those same persons the definition of a Communist. The questioner will be surprised to learn that the public has given the matter little thought. To many of our citizens, a Communist is a member of a political party currently in disfavor with the Republicans and the Democrats. No more: no less. The average American has never had a course of instruction in political science and it is not proposed here that he be given one. But for the good of the Nation, he should know something about his enemy and why he must fight him. Our troop information and education program is a step in the right direction but why restrict this service to the soldier? Why wait until the citizen becomes a soldier and then give him the facts which should be an integral part of every citizen's background?

This is only one illustration of the need for education. There are many subjects which should be incorporated into the curriculum, but their listing is outside the scope of this article.

Our educational program must employ all the media available for dissemination, including the press, radio, television, our schools and universities, and the motion pictures. Each message must be brief, simple, and interesting. Here is an opportunity to exploit the talent for publicity and advertising in which our country abounds. This may sound expensive but expense cannot be considered when the profit may be our salvation. Moreover,

there are ways to hold the cost to a minimum. Why not count upon assistance from our public-spirited industries and merchants? Never before have they hesitated to help a worthy cause. Frequently, they include, in their national advertising programs, pleas for safe driving and requests for funds to fight tuberculosis and polio. If approached properly, is it likely that they would refuse to assist in the battle against the greatest menace to our national welfare?

Disseminating Information

The screening, interpreting, and disseminating to the public current information and intelligence is, undoubtedly, the most complex task that confronts us. It involves the co-ordinating of all public information and intelligence agencies of the various departments of the Government. Since we have a national intelligence co-ordinating agency—the Central Intelligence Agency established by The National Security Act of 1947—one problem is already solved. This non-military agency is capable of deciding what information and intelligence can be passed to the public without endangering our security. It is the organization best qualified to answer those questions which determine whether or not a security classification may be lifted. These questions, in general, are:

1. Will the disclosure compromise a source of information?
2. Will it give aid or comfort to an enemy (or potential enemy) by providing him with knowledge concerning our activities, or the results of his own hostile acts?
3. Will it divulge the extent of our knowledge concerning the enemy (or potential enemy) and his activities?

Even if the answer to any one or all of these questions is in the affirmative, the final decision as to whether or not the information should be released must take into account the possible value to be de-

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The need for an authoritative agency to digest and interpret the significance of current events is imperative. The reading and listening public cannot help but suffer from mental indigestion if it tries to consume the tremendous repast provided daily by the press and radio. No one can question the patriotism and efficiency of the newspaper correspondent and the radio news analyst. It is simply a question of volume and viewpoint. Recent news dispatches illustrate this fact. One reads the brilliant account of a war correspondent who accompanied the 2d Infantry Division in a victorious assault against the North Koreans. On the same page, another correspondent describes the courageous but losing battle fought at the same time, on his small part of the front. The reader's reaction, after scanning the two news stories and listening to his favorite commentator, is "Are we winning or aren't we?" He does not have and, logically, cannot form a clear concept of the over-all picture. The "big picture" should have been given to him on page 1 of his newspaper in a brief, concise summary prepared by the most authoritative source in the country. This applies not only to war news but to all information and intelligence which relates to our foreign and military policies. Whenever possible, the public must be told not only what happened, but also the significance of what happened, what we must do about it, and what will happen if we do not do something about it.

There is little doubt that the press, the radio, and the reading public would welcome such a concise and interpretive official summary presented in digestible form.

Let us compare the position of the public to that of the commander of any military force in the combat zone. After all, any war we fight must be fought with a

citizens' army. The public must furnish the manpower, the matériel, and the will to win. It also elects our commander in chief. General Public is, in the final analysis, a commander. The military commander has on his staff, however, an intelligence officer. This officer, through his many well-trained agencies, collects in-



formation about the enemy and the area of operations. He evaluates this information, determines its significance, and draws conclusions. He, frequently, briefs his commander on the intelligence he has compiled concerning the enemy and the enemy's capabilities, in order that the commander can make sound decisions and plans. Other trained staff officers brief the commander on conditions relating to his own forces. Thus, the commander has obtained quickly a complete and concise picture of his own and the enemy's situation before he is required to act.

But who briefs General Public? He is advised by thousands of news correspondents, each presenting his own report from his own small part of the world. The only attempt to interpret this news is through the editorial page or by the news analyst, and many able editors and analysts will seldom agree, as witness their

varied interpretations of the news. Actually, the position of General Public is somewhat analogous to that of a military commander who has, as part of his staff, a debating society in place of an intelligence section. The members of this foreign body would then present to the com-

and policy-makers exhibit a divided opinion in their public statements, public opinion will be divided correspondingly. Here is a task which would appear to require the combined talents of Socrates and Julius Caesar because it deals with personalities. However, it was undertaken

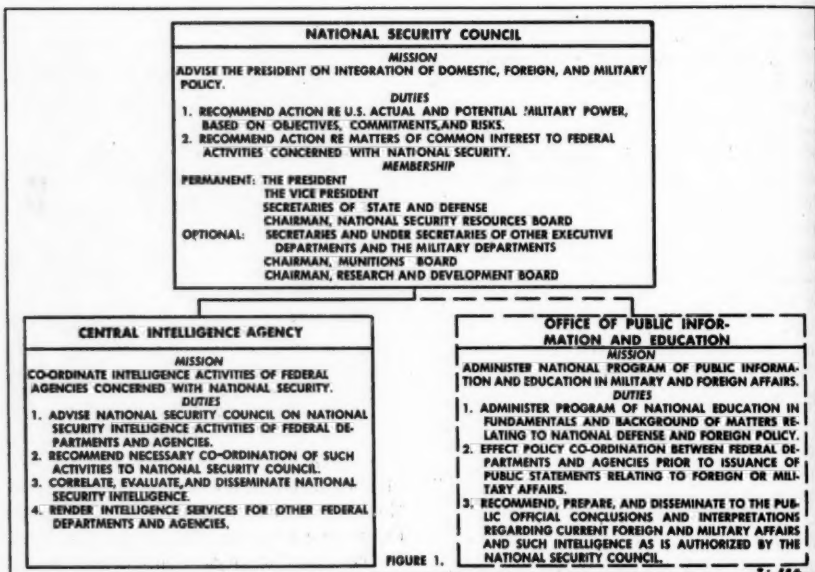


FIGURE 1.

mander their individual interpretations of the information of the enemy. In many situations, the interpretation which would be accepted and acted upon by the commander would be that presented by the glibest member of the staff.

This condition is no reflection upon our press and radio. These agencies have neither the responsibility for, nor the qualifications necessary for the preparation of an official interpretation of current events as they relate to foreign policy and military affairs.

The third major task is one of co-ordination. As long as our Nation's leaders

and accomplished with a surprising degree of success by the Domestic Branch of OWI during World War II. This success was attributable largely to the patience, tact, and understanding of the OWI director, Mr. Elmer Davis. In his own words, one of the duties of the Branch was "... to co-ordinate the war informational activities of all Federal departments and agencies for the purpose of assuring an accurate and consistent flow of war information to the public. To do this, we must persuade the different agencies concerned with the same problem to get together and agree what is to be done

about it so that they can tell the same story. . . . Our office clears the speeches of the higher policy-making officials of Federal departments, to make sure that they conform with the general Government policy, when that policy has been established, and to try to make sure that they do not confuse the public too much before it has been established. . . ."

Here again, it is difficult to perceive why such co-ordination should be considered essential only in time of war. It is not necessary to recount the frequent occasions when Federal departments and agencies have crossed swords publicly on foreign and military policies which were already firm. In addition, the public has not failed to notice how one Federal department would issue an optimistic report on a foreign situation or on the status of our own military resources, only to have it contradicted by a pessimistic statement, on the same subject, from another department. It is not only difficult to clear up the resulting confusion in the public mind but, frequently, a citizen will become exasperated to the point where he refuses to believe anything, regardless of the source.

Recommendations

Now, let us draw some recommendations from this critical analysis of a deplorable situation. An agency to perform this threefold task must be established. An appropriate name for this new agency would be the *Office of Public Information and Education*. Let us establish it above the public information offices of all governmental departments and agencies. To help compensate for this additional agency, the various departmental public information staffs should be reduced to a minimum, and they should be assigned only the functions of advisers and consult-

ants on policy, technical matters, and security as it relates to our activities. The Central Intelligence Agency will provide security clearance and advice on information and intelligence pertaining to the activities of foreign countries.

Where will our new office be placed in the Federal structure? Since it must deal, in a co-ordinating role, with the executive departments of the Government and since it must have sufficient authority to enforce its decisions, it must be located at the top of the structure. So let us make it a subsidiary of the National Security Council.

The membership of the National Security Council, in addition to the President, includes the heads of our executive departments most vitally concerned with national security and foreign affairs. The Office of Public Information and Education or PIE, as it will be known, also is an operating and co-ordinating agency concerned with these same matters. Information prepared and disseminated by an agency at this highest level is not likely to arouse the accusation that a particular military service or executive department is issuing propaganda to seek public support for its own ends.

This is not an attempt to advocate "thought control" or the molding of public opinion by the Government. It is a vote for a means of distributing, and making more digestible, food for thought. The right of every man to form and express his own opinion must, at all costs, be preserved, but let us equip him properly with the basis upon which to form a sound opinion in a minimum of time.

Before we talk about mobilizing industry and manpower, let us take steps to mobilize public opinion. A public opinion already mobilized will simplify and speed the accomplishment of those other tasks

which arise in a national emergency. The public must be aware of the situation in the fields of foreign and military affairs. A clear understanding by the public of the issues involved, and the significance

and probable consequences of current events abroad, can result only in a more united front at home.

No nation can shape a more solid bulwark for its security.

In the struggle in which we are engaged today, truth and the means to disseminate it are as much a part of our national resources as our manpower or our scientific genius, or our industrial potential.

General J. Lawton Collins

With the growing importance of our international relationships in the lives of our people, the impact of public opinion on policy determination in this field tends correspondingly to increase.

Armed Forces Talk

Third Army's Planning for the Crossing of the Rhine River

Lieutenant Colonel Frank E. Stevenson, *Corps of Engineers*
Instructor, Command and General Staff College

MANY articles have been written about the river crossings conducted in World War II. Most of those have dealt with the assault operations only, with but little or no mention of the planning involved. Supply, intelligence, and operational plans must have been integrated prior to the crossing, or the operation would have failed. Planning is always done prior to any operation but is often forgotten once the operation is over.

It is the intent of this article to discuss the planning that must take place before a river crossing of any magnitude can be undertaken. To illustrate this discussion, the Third Army's crossing of the Rhine River has been selected since this army made the first assault crossing, in modern times, of that river. Most of the discussion effort will be devoted to the planning done by the Engineer Section for that operation. The same amount of detailed planning for river crossings was done by all armies and probably the same lessons may be learned from each.

The planning done by the Engineer Section, in preparation for the river cross-

ing, was selected as the subject of this article for three reasons: first, the author is an engineer and, therefore, is more familiar with the working of that section; second, a large contribution to a river crossing is made by engineers; and third, the planning in this section is typical of that done by all sections of the general and special staffs of an army.

There are many lessons which can be learned by a study of Third Army's assault crossing of the Rhine River. Some of these lessons will be pointed out later in the article.

The Rhine Crossings

Third Army began its first assault crossing of the Rhine River at Oppenheim, at 2200 22 March 1945. This crossing caught the Germans completely by surprise. Many German soldiers were eating in their foxholes, or asleep in their billets, when the foot soldiers of the 5th Infantry Division confronted them.

American losses were negligible. Within 20 hours, at 1800 23 March, a treadway bridge was opened and other divisions of the army began to move across the river.

The success of a river crossing operation is dependent on the planning for that action; planning which must be initiated early. Third Army's Rhine River crossings illustrate the details found in such a plan

Prior to this time, ponton rafts, LCVs, LCMs, and infantry support rafts had carried both men and supplies across the Rhine to support the initial assault crossing. This crossing, at Oppenheim, is of more than casual interest as Oppenheim and Nierstein had been captured on 21 March 1945 only 1 day prior to the crossing.

Following the initial crossing at Oppenheim, additional crossings were made at Boppard on the night of 24-25 March, at Oberwesel and St. Goar on the night of 25-26 March, and at Mainz on the night of 27-28 March. Each of these crossings was made using ferries, rafts, and a tactical bridge. In all, 10 tactical bridges were built. These are shown in the table on page 35.

During the crossing, Third Army used or had available the following equipment:

22-horsepower outboard motors	660
55-horsepower outboard motors	250
Floating Bailey bridge	7,000 feet
Heavy ponton bridge	2,200 feet
Steel treadway bridge	11,000 feet
LCVPs	24
LCMs	15

Background for Planning

Any discussion of the planning for an operation should include a brief recapitulation of the events leading up to that operation. The Third Army's crossing of the Rhine had the following background:

1. The Combined Chiefs of Staff conceived the initial plan for the invasion of Europe and developed, on very broad terms, their strategic plan. Next, the War Department and the Navy each developed their portion of the plan in more detail, including feasibility tests. On being received by the theater, more detailed plans were made based on those of the Combined Chiefs of Staff and the War and Navy Departments. From theater, the planning, in ever increasing detail, was passed to army groups and from army groups to

armies. In most instances, planning was done concurrently on each level of command by all agencies concerned, without waiting for the final plan of the next higher headquarters.

2. Third Army arrived in England in March 1944, and immediately began planning for the operation on the continent of Europe. At first, most of the general and special staffs were engaged in planning, but when the army became operational, in August 1944, special planning staffs were formed. At this time, the Engineer Section, Third Army, established a subsection to plan for the crossing of the Rhine. The chronology of planning and actions to implement the plans, insofar as the Engineer Section was concerned, was briefly as follows:

a. Tentative locations of the crossings were selected.

b. Preliminary estimates of the necessary tactical crossing equipment were made in September 1944, and the actual assembly of the equipment was begun. Contracts were let for the local manufacture and purchase of many parts of the floating Bailey bridge and the treadway bridge.

c. In October, dossiers on the Rhine River, in general, and on specific bridge sites, in particular, were compiled. These dossiers were later reproduced and furnished to corps, divisions, and to engineer combat groups.

d. From November 1944 to March 1945, plans were kept current, and the assembling of equipment and materials continued.

Information Required

Initially, the 1st Army Group, later redesignated the 12th Army Group, had passed to Third Army all the available data which pertained to the tactical operations then contemplated. From this concept of the tactical operations, the Commanding General, Third Army, evolved

his tactical plan, the basis for all other army planning.

The planning concerned all the general and special staff sections. As is normal, all of the special staff including the technical services were involved in the planning based on the information as furnished by the general staff. For example, personnel problems were similar to those

which there is no substitute. This equipment is difficult to hide from the enemy and most of it can be destroyed or damaged easily.

In order to prepare plans which were both realistic and workable, the planners had to have information concerning the inherent characteristics of the Rhine River. These included the width, depth, river cur-

LOCATION	TYPE	LENGTH IN FEET	CON-	COM- PLETED
			STRUCTION TIME	
Oppenheim	Steel treadway (Class 40)	972	11 hr 30 min	23 Mar
Oppenheim	25-ton ponton (Class 40)	1,280	13 hr	24 Mar
Oppenheim	Steel treadway (Class 40)	1,116	20 hr	25 Mar
Boppard	Steel treadway (Class 40)	1,044	25 hr 30 min	26 Mar
St. Goar	Steel treadway (Class 40)	828	36 hr	27 Mar
Mainz	Steel treadway (Class 40)	1,896	24 hr	29 Mar
Oppenheim	Floating Bailey (Class 40)	942	44 hr	31 Mar
Mainz	Floating Bailey (Class 40)	1,800	72 hr	2 Apr
Bingen	Floating Bailey (Class 40)	1,520	54 hr	5 Apr
Budenheim	Fixed Bailey on pile bents with 520 ft of floating section on barges	2,220	9 days	12 Apr

of any other operation. Intelligence, in this case, was of a more specialized nature, inasmuch as a river crossing is a very specialized type of operation with many problems uncommon to normal operations. Detailed plans are required for both the training of troops for the operation and the operation itself. Supply planning must be exact because of the many items required. These involve enormous tonnages, large bulk, and special equipment for

rents, flood heights and flood periods; condition of the banks along the river; adjacent road nets; locations of possible crossing sites, bridge sites, dams and their characteristics, levees, dikes, and other man-made structures; as well as many other items. Much of the information mentioned above had been obtained previously and was furnished to Third Army planners. This information came from many sources: from the files of the British

War Ministry; from the War Department; from the State Department; from the Department of Commerce; from universities in the United States and Great Britain; from industry; from our Allies; from aerial photographs, both vertical and oblique; and from friendly agents.

Maximum use was made of the information furnished, and as new information became available it was incorporated with that already available. There was a free exchange of information between all of the headquarters involved, that is, from theater to the 12th Army Group, to Third Army, to the corps and divisions of the Third Army, and from that army to the other armies of the army group. Information traveled also in the reverse manner, that is, from subordinate major elements to the army and so on up the line. The information available, together with that obtained as time passed, enabled the planning staffs to prepare the necessary studies and maps. These will be discussed in more detail in subsequent paragraphs.

Geological and Topographical Studies

Extensive studies were made of the geological and topographical nature of the ground on both sides of the Rhine. Maps containing this data were prepared, together with climatological tables, indicating the probable number of days per month that tanks and other vehicles could be expected to move cross country or off roads in the different types of soils in the area.

The data on the geological and topographical nature of the soil was used in determining the best approaches to and exits from the various crossing sites. Selection of the proposed crossing sites involved many additional problems such as the trace and width of the river; velocity of the current; nature of the banks and approaches to the banks; and location and size of bars, islands, dikes, levees, and other obstacles within or adjacent to the river.

Other considerations were observation, concealment, suitability of the river bed for anchorages for the floating bridges and pile driving.

Additional detailed geological cross-sections and reports on the heights and nature of the banks were prepared. These cross-sections were especially useful for determining suitable locations for driving piles for the construction of fixed highway and railroad bridges.

Information was gathered as to the many structures built by the Germans and the French over a period of 100 years for flood control and navigation on the Rhine.

Estimating Bridging Requirements

To assist in estimating the requirements for tactical bridging equipment, maps were prepared giving the prevailing widths of the Rhine and of the streams in the areas adjacent to and beyond the Rhine. The width of the water gap at or near roads was used to determine the amount of floating bridge equipment needed.

Reports were prepared giving the location, load capacity, and a detailed description of the spans and approaches of every existing bridge in the Rhine area. This information was particularly valuable in planning for the fixed bridges. For example, if only part of an existing bridge were destroyed it might be possible to use the existing portion by repairing or replacing the damaged parts or spans. Even if the entire bridge were destroyed it still might be possible to use the existing approaches when building a new fixed bridge.

Enemy Capabilities Considered

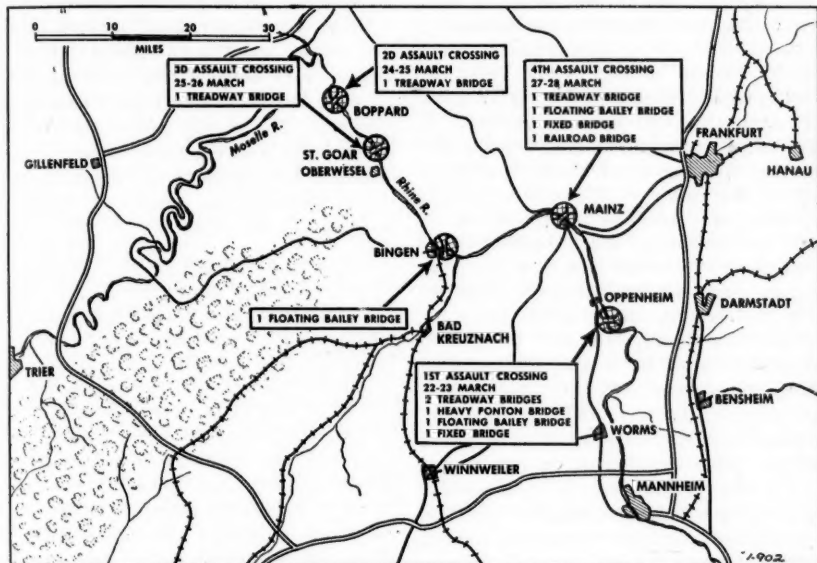
Since river crossing operations are highly vulnerable to air attack, the enemy's probable air effort had to be calculated. To assist in this, maps were prepared showing the location of all existing German airfields. Areas were located where friendly troops might be dropped to support the crossing attack or where enemy

airborne troops might be dropped to attack the Third Army's bridgeheads established along the Rhine. Sites were selected where airfields could be constructed quickly to support our crossings. The location of all of the above-mentioned sites and areas were overprinted on maps. Complete de-

beams was captured at Hanau. Additional steel beams, including steel trestles and piles, were manufactured in steel mills in France and Luxembourg.

Photo Reconnaissance

As the planning became more detailed,



tailed information on each location was given on accompanying data sheets.

Local Resources

Other maps were prepared giving the location in Germany of quarries, sand pits, cement plants, and sawmills. This information was used to plan for the maximum use of local resources for construction, thereby relieving the ever critical burden on supply facilities. In this connection, it is interesting to note that materials for the two fixed bridges and the railroad bridge built, in the Third Army zone, across the Rhine River were obtained locally. A considerable quantity of steel

gaps appeared in the information that was vital to that planning. Other information, such as the width of the river, the condition of the existing roads and bridges, and the location of airfields had to be obtained and kept up-to-date if the information was to be of much value. While much of this data and information was obtained by friendly agents, information was secured from photographs obtained by aerial reconnaissance units taking both vertical and oblique pictures. As Third Army advanced closer and closer to the Rhine, the aerial photographic work was stepped up and intensified until such pictures were being taken daily.

Warning Against Floods

The danger of the flooding of the Rhine, either by natural or man-made causes, was of paramount consideration. Between Basle and Lake Constance, there were seven dams which the Germans could manipulate or destroy to cause serious floods as far north as Mannheim. A flood would delay the crossing of the Rhine and, if it occurred during the crossing, could prevent the use of ferries and rafts. It would, in all probability, destroy or force the removal of all floating bridges. If such a catastrophe occurred during the crossing that portion of the army already east of the Rhine would be left without logistical support except for that which could be furnished by air. To prevent surprise, theater established a flood warning system. From all available data, together with the information furnished daily by all agencies, theater was able to predict the occurrence of floods with a reasonable degree of accuracy. This information was furnished to all armies and they, in turn, furnished gauging reports from selected stations, after they closed on the Rhine. It is interesting to note that, in certain reaches of the Rhine, the highest floods in 35 years were recorded during the winter of 1944-45 but no floods occurred during the assault phase.

Troop Training

Operations and Training (G3) was concerned with obtaining the necessary troop units of the required types, training these units, and assigning appropriate missions to each. All units had to be integrated into the over-all plan. As there were never sufficient troop units to perform all of the required tasks, it was necessary to eliminate those tasks that could be deferred, and to phase the various operations so that one unit could be used to perform two or more tasks. This was the case with several of the engineer combat battalions. These units assisted in the assault crossing

by operating assault boats, ferries, and rafts. As soon as the initial phase was completed, the battalions were employed to construct tactical bridges (usually the floating Baileys). The shifting of units from one task to another required close timing which would not have been possible without the preparation of detailed plans both by the higher headquarters (army and corps) and the unit doing the work. It was very obvious that detailed plans must be furnished to all units as soon as possible. The army engineer recommended the assignment of tasks for the engineer units down to and including battalions and separate companies. This was approved by the army G3.

Training was a big job and a "must." In October 1944, the Third Army Engineer Section established a school for all engineer troops in the army. Each combat battalion spent 3 days at the school. Training was conducted in the use of floating equipage to include the construction of the class 70 floating Bailey bridge, the use and operation of storm boats, tandem M2 assault boats powered by 22-horsepower outboard motors, and rafts and ferries of all types. In March 1945, a school for motorboat operators was conducted on the Moselle River near Trier. Here, engineer personnel were trained in the operation of both the 22- and 55-horsepower outboard motors. This training included all phases of their operation, stoppages, maintenance, and emergency procedures. The school continued to function until certain designated engineer combat battalions had a minimum of 200 trained motorboat operators per battalion. At first glance, the importance of the motorboat training is not apparent, but the assault plan called for the initial wave to cross in boats paddled by the occupants, and the succeeding waves to be transported in tandem M2 assault boats powered by 22-horsepower outboard motors or by

storm boats powered by 55-horsepower outboard motors. In the operation of ferries, as many as five outboard motors were to be used per ferry.

To assist units in training, comprehensive photomaps were prepared. The Rhine and its adjacent areas were covered thoroughly by a series of mosaics together with ground photographs of bridges, dikes, levees, and other structures.

Scale models (1 to 10,000) of each crossing site were furnished to the Third Army for detailed study and use in planning. These models were photographed under dim lights, and prints were furnished to the troops to assist them in identifying locations at night and in the early dawn.

Another phase of training was that accomplished by the Navy detachment that was to operate the LCVPs and LCMs and the army units with whom this detachment would work. Naval craft were delivered to the army during November and a training site was established on the Moselle River. Considerable experimental work was done to determine the best way to launch the craft under varying conditions of current and from various types of banks. Tables and diagrams were developed for loading properly the craft with army equipment and supplies. Naval personnel were trained intensively in the techniques of operating and beaching their craft in swift river currents. Simultaneously, engineer troops were trained to launch and load the naval craft.

Divisions continued to conduct training in the technique of conducting an assault crossing. Previously, the 5th Infantry Division had made 22 river crossings. However, when it was given the mission of making the crossing, it conducted a brief period of refresher training just prior to the actual crossing.

Plans were kept up-to-date and, as new units arrived, the commander and his staff were briefed on the part the unit was to

play in the crossing. After December, each unit was furnished a dossier which gave, in detail, a complete picture of the projected activity of the unit.

Control and Transportation of Equipment

Initially, as planned by 12th Army Group, three armies were to cross the Rhine simultaneously. Therefore, equipment could not be transferred between armies. With this in view, and cognizant of the shortage of tactical crossing equipment, 12th Army Group kept close control on all available equipment and allocated it to each of the three armies. This control did not relieve the armies of the responsibility of determining the quantities of tactical crossing equipment needed and of requisitioning the shortages. Third Army began its preliminary estimates of the amount of this equipment needed in September 1944 and completed the estimates in November 1944.

After some study of the routes of communication to the projected crossing sites, the routes to the ports, and the availability of suitable storage areas, Third Army established an engineer depot for floating bridge and assault equipment at Toul, France. This site had an additional advantage of being on the Moselle River, thereby enabling tests to be made of new equipment as it arrived in the depot. Here the equipment was received, stored, and maintained until needed. Necessary modifications were made on the spot. Loading details were trained and preparations were made to move the equipment to the Rhine, when needed, as rapidly as transportation became available. Units charged with the responsibility of constructing the floating Bailey bridges sent representatives to the depot. Together with personnel from the depot, and from the unit furnishing the transportation, these representatives worked out all loading details so that the equipment arrived at the

bridge site in the sequence needed. The representative from the construction unit remained until the first piece of bridge equipment was loaded and waiting to move. Other equipment then was handled in a similar manner.

Special Problems

The solutions to special river crossing problems required many items of equipment not normally available. To protect the bridges against waterborne attack, three types of booms were to be constructed and placed upstream from each bridge or series of bridges. One boom was to be placed approximately 800 yards upstream. It was to be an impact boom to stop barges or other floating craft. It was made of four 1-inch wire cables supported by large steel drums in a timber frame, anchored at 50-yard intervals. A second boom was to be placed 500 yards upstream from the bridge. It was a debris and antimine boom made of logs linked together with cable. This boom was designed to collect debris and to detonate floating mines. A third boom, 300 yards upstream from the bridge, was a naval antimine net supported on floating drums. It was designed to stop swimmers, one-man submarines, and any mines that might pass the first two booms.

The Germans already had used specially trained and equipped swimmers to attack the Nijmegen bridge in the British area. The net used by the British had been proved inadequate. Before launching the swimmers, the Germans had thrown straw in the water which clogged the small mesh of the net sufficiently to build up enough pressure to destroy it. Hence, it was decided to use the Navy antimine net which was heavier and had a larger mesh. It is to be noted, historically, that a number of German swimmers were caught by the net at Oppenheim, the first night after the first bridge was completed.

The swift Rhine current made anchors,

large enough to hold these booms and the floating bridges, another special problem. Enough naval anchors were not available. Several special types of anchors, therefore, were developed and stored. One was a box made of Bailey bridge panels and filled with rubble; another was made by welding flukes to Bailey panels.

Another problem caused by the swift current of the Rhine was that of keeping the upstream ponton of the floating Bailey bridge from sinking due to water coming over the bow. Many experiments were made. Finally, a false bow was developed which provided more freeboard and prevented the ponton from filling and swamping. These false bows were manufactured in France and Luxembourg by local contractors.

After all the equipment had been assembled, the task of getting it from the depot at Toul to where it was needed was one of considerable magnitude. The problems attendant to the movement of one item alone will serve as an illustration. A special-built truck, standard equipment for the treadway bridge companies, carried 36 feet of treadway bridge. As 11,000 feet was needed, over and above the prescribed loads of the treadway bridge companies, it can be seen what a task it was to move that amount. An interesting side light, both as to moving this amount of bridge and constructing it, was the development, by XII Corps, of the practice of assembling 2½-ton cargo trucks some distance to the rear of the crossing site. A timber frame was placed on these trucks which would hold one float, inflated and complete with saddle, for the treadway bridge. In the bed of the truck was placed enough treadway bridge to make a complete 12-foot section. This enabled the bridge to be constructed more rapidly, prevented the trucks from congesting at the bridge sites, and expedited the release of the trucks of the treadway bridge companies for a return trip to a supply point

or depot for a replenishment load. The construction of ponton bridges presented somewhat the same problems as did the treadway. The problems incident to the construction of the floating Bailey bridge were more difficult to solve, for there were no trucks or trailers specially designed to haul this equipment. Panels could be hauled in 2½-ton trucks, but modifications were necessary to haul the pontons on the heavy ponton trailers.

Past experience and advance planning enabled Third Army to move the vast quantity of tactical crossing equipment when that task became necessary. Many of the supply points were located 150 miles from the Rhine crossing site. No railroads were operating far enough forward to be of benefit. The enemy had not been mopped up completely in the Saar-Palatinate thereby forcing the use of a more circuitous route to the north. In August 1944, due to the load on the transportation system, some difficulty had been experienced in moving engineer supplies from the beaches to engineer depots and supply points. To alleviate this, one engineer combat group was given the mission of moving these supplies. To accomplish the assigned mission, engineer heavy ponton battalions and engineer dump truck companies were assigned to the group. The moving of the supplies was accomplished in a most expeditious manner.

In the advance across France, many bridges were captured intact and the need for the heavy ponton bridges did not develop as anticipated. This decreased demand permitted the engineer group to concentrate on the moving of other engineer supplies. This group was assigned additional units just prior to the Rhine crossing. By operating around the clock, it was able to move all the required equipment not hauled by other units as a prescribed load or replenishment. The one exception was the 15 Navy LCMs which were moved forward on tank transporters.

The intelligence, the operations, and the supply planners co-ordinated and integrated their plans. Maps, operational plans, and supply instructions were assembled and compiled into dossiers. These dossiers, together with the Engineer Outline Plan, were furnished to all interested units down to and including engineer combat groups. The operational plan, as contained in the Engineer Outline Plan, together with the other material, furnished the basis and served as a guide for the more detailed planning by the lower echelons.

Lessons Learned

The assault crossing of the Rhine River was not an accident and could not have been accomplished without the enormous planning which took place prior to the actual crossing. Several lessons can be learned from the planning alone, without regard to the actual tactical operation.

First.—Planning must be started as early as possible. This is indicated by the time that planning for the Rhine crossings began in detail—August 1944.

Second.—Planning of any magnitude should be the responsibility of a planning staff which must be separated from the operational staff. The planning staff must be allowed to supervise the actual operations which they planned. The creation of a planning staff, in August 1944, which planned and then supervised the execution of the plan illustrates this point.

Third.—Planning must be co-ordinated: between all sections on both the general and special staff, with higher headquarters, and with lower units. This point is illustrated by the rapidity with which equipment was moved forward and support bridges constructed.

Fourth.—Everyone concerned must be kept informed at every stage of planning so that lower units can undertake con-

current planning at the same time that planning is being done by higher units.

Fifth.—Make plans flexible. Sudden successes may upset completely the detailed time schedule. The unexpected success of the assault crossing at Oppenheim and the rapid expansion of the bridgehead made possible the construction of the first tactical bridge approximately 28 hours ahead of the estimated time.

Many tactical lessons may be learned from the crossing of the Rhine. These emphasize the fact that the Third Army commander did not ignore any of the principles of war.

First, *surprise*. By knowing that all plans were complete and could be implemented without delay, the commander,

by crossing only 1 day after Oppenheim had been taken, caught the Germans completely by surprise.

Second, *flexibility*. This is indicated by the additional crossings made downstream from Oppenheim, all at later dates.

Third, *economy of force*. This is shown by the manner in which engineer troops were used. Units which assisted in the assault crossings later were used to build floating bridges.

Fourth, *objective*. The Third Army had a definite objective—to seize bridgeheads east of the Rhine River and prepare for an advance to the east to capture the Frankfurt—Darmstadt area. The attainment of that objective was kept foremost in the minds of Third Army planners as they prepared for the forthcoming operation.

It is our hope that through increased air mobility each of our divisions eventually can do the work of several present-day divisions. That hope is based not on mere speculation but on the impressive results we achieved by the limited employment of air power in committing men and equipment to combat from the air in great land battles of World War II. There is the further fact that in Korea, air power delivered the first troops into the fight and continued to deliver large quantities of supplies and replacements both from the United States and from Japan, as well as bringing parachutists directly into combat.

General J. Lawton Collins

Despite the fact that we are backing up our commitments in Korea and our responsibility towards the United Nations through our military and industrial might, we are always ready to negotiate in appropriate international forums. Our objectives and our determination are clear, we seek to assist in creating situations in which the economic health and political stability of the free world will develop and mature. We have no territorial ambitions. We desire a free world based upon the right and liberty of the individual.

Major General Anthony C. McAuliffe

Tomorrow, Next Week, Next Year

Lieutenant Colonel Robert E. Coffin, *Artillery*
Instructor, Command and General Staff College

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"The common purpose of Army war plans, campaign plans, and operation plans is to let each element of the command know what is expected of it in order that the efforts of all may be co-ordinated toward the attainment of the common objective."—FM 101-51, Department of the Army Planning System.

SUCCESSFUL military actions are based on sound plans. This axiom applies to all echelons of command. The squad leader fights his men in conformity with the platoon leader's plans; the theater commander utilizes his forces in conformity with the strategic war plan. The squad commander's action is planned only minutes or at most hours before it happens, whereas the theater commander's actions are based on plans that were formulated months and even years before.

Planning Problems

What problems face all tactical commanders in planning? First, *time*; the time necessary to prepare the plan itself, the time necessary to assemble the troops and matériel required by the plan, and the time to prepare and issue orders and rehearse the planned operation. Second, *staff organization*; the organization of a staff which will permit the commander to carry out his dual role of director of current operations and planner for future operations. Third, *control*; the keeping of all staff planners synchronized so that all elements of the plan are developed simul-

taneously to achieve the common objective. Fourth, *co-ordination*; the integration of the over-all plan with those of the navy and air force, and the plans of subordinate headquarters, to ensure that all plans are mutually supporting.

The factor of time always must be given careful consideration before a planning mission is assigned to a subordinate headquarters. The lower headquarters must be given ample time to prepare their plans based on the over-all concept of the operation.

In organizing his staff for long-range planning, the commander must avoid placing his planners in an "ivory tower" where they are out-of-touch with current operations. These—current operations—always have a marked effect on contemplated plans, and their influence must be reflected in those plans. Conversely, future plans will determine, to some extent, the assignment of immediate missions since current operations should facilitate future operations. In short, the organization of a staff must provide for the releasing of its planners from the administrative details of existing operations, yet keep them in-

Advanced planning is vital to the success of every operation. Such planning, to be effective, must be timely, organized, controlled, and co-ordinated, and should, above all, not take place in an 'ivory tower'

timately acquainted with current developments.

Control of planning requires positive means of ensuring that all planners are working toward the same goal. The use of outline plans and planning time schedules are effective control measures.

Internal security within a headquarters may force the commander to entrust the planning, initially, to a small group of individuals. However, at some point in the planning process, subordinates must be utilized to complete the details. The great value of an outline plan and a time schedule then becomes apparent. The broad concepts will have been fitted together to form the basic framework of the plan. The tedious task of filling in the many details can then be accomplished within that framework.

The most difficult problem facing any planning staff is co-ordination. A major operation will include not only army, navy, and air force plans, but, within each of these services, there will be tactical, fire support, administrative, and communications plans which must be co-ordinated. The army commander, from the initiation of planning, must be sure his plans fit into the over-all concept of the operation and are co-ordinated with the plans prepared by supporting and supported headquarters. The planner never forgets "for the lack of a horseshoe nail the battle was lost," and checks and rechecks his plan with those prepared by the other services that are concerned to assure himself that he has the "horseshoe nail"—whether it be the selection of a tactical objective, or the provision of a cotter pin.

Field Army Planning

The problem of simultaneous planning, of current operations, and for future actions, is particularly difficult at the level of the field army. Normally, it is the highest echelon of command engaged ac-

tively in directing current operations, and is the lowest concerned with long-range planning. Department of the Army, theater, and army group headquarters, primarily, are planning staffs. They accomplish their mission by issuing directives and orders based on long-range plans. Corps, division, and smaller unit commanders execute the plans conceived by higher commanders and prepare relatively short-range plans to accomplish their mission. Thus, the large tactical and logistical staff of the field army commander is the agency which converts long-range plans and programs into detailed operation orders. This responsibility of the field army commander forces him to organize his staff so that it can supervise the execution of current plans and orders and, *concurrently*, prepare new long-range plans.

A field army commander's decision on the organization of his staff for planning will be influenced by the existing situation. If his army is engaged only in planning a future operation, the entire staff can be used for planning. If, on the other hand, the army is fighting, the bulk of the staff is engaged in current operations.

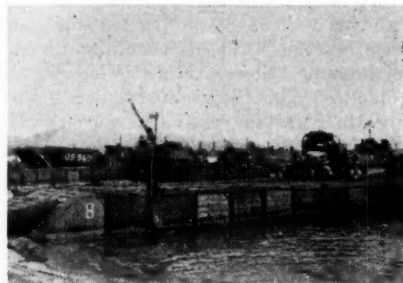
Long-Range Army Planning

As an example of an entire army headquarters planning an operation, let us consider the invasion of Southern France by the United States Seventh Army.

Late in 1944, after the completion of the Sicilian operation, the Seventh Army commander, in Palermo, received a planning directive from Allied Force Headquarters. The directive instructed the army to prepare outline plans for further amphibious operations in the Mediterranean Sea area. Logical areas for future operations were selected by the army commander and the preparation of the outline plans was begun. Several plans for each of the selected areas were developed by the staff and presented

to the army commander for his consideration.

Meanwhile, higher level planners had determined that the Marseille area was the one which contributed most to the overall campaign plan, and the Seventh Army was directed to concentrate its planning



Vehicles and supplies being unloaded onto the beaches near San Tropez, France.

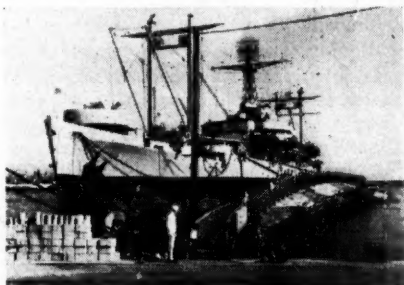
on that area. A major portion of the army staff was moved to Algiers and established as a planning section of the theater headquarters. This arrangement for concurrent planning permitted informal coordination between the theater and the army staff, as details of the plan were developed. The army used, as a basis for its plans, the outline plan developed earlier, incorporating its best features into the concept already developed by the theater planning staff.

The organization of the army staff was the normal one for such a headquarters, although each section was limited, for security reasons, to relatively few individuals. As the target date approached, the size of the army's staff was increased to complete the details of planning. Navy and air corps planning staffs were established adjacent to the army headquarters, to facilitate co-ordination. Representatives of the base section, organized to support the combat forces ashore, were present in the headquarters to take part in the logistical planning, since much of the special

equipment had to be ordered from the Zone of Interior.

Control of the staff planning was facilitated by means of a series of conferences attended by members of the theater, army, navy, and air staffs. Preliminary plans were subjected to "war-gaming" to test their feasibility. This resulted in the development of minimum requirements for shipping, troops, and support aviation. Based on the assumption that these requirements would be met, planning progressed to the development of a basic operation plan.

The successful completion of the first phases of the Normandy invasion released the shipping necessary to mount the Southern France operation. The theater, assured that the landings would be made, assigned forces to the Seventh Army. Again, concurrent planning techniques were employed. The United States VI Corps, a combined British-American airborne task force, and French Army "B" were the major elements of the Seventh Army. [French Army "B" later became



USS *Catoctin*, the flagship used during the assault landings in Southern France.

the First French Army, a separate entity under the 6th Army Group.] These commanders were given planning directives by the army, and their staffs and the army staff, all in close physical proximity, continued to improve and enlarge upon the existing plans.

When the final operation orders were issued, all the major headquarters concerned had been involved in the development and testing of the plan upon which the orders were based. The army headquarters required no modification of its organization to provide for the planning staff. Control had been facilitated by continued briefings, war games, and rehearsals. Co-ordination had been achieved by concurrent planning and informal interstaff conferences. The original brief outline plan had been amplified until it became, finally, the detailed operation order, the execution of which moved, controlled, and supplied thousands of men and machines over hundreds of miles of water and land.

Short-Range Army Planning

Opposed to the "pure" planning problem faced by a commander when his sole mission is to complete a plan is the situation where his forces are engaged in combat and he must plan, at the same time, for future operations. The direction of daily operations, to include the tactical support and supply of the combat troops, is of paramount importance; yet there is the continuing necessity for advance planning.

An illustration of a headquarters carrying out this dual role is that of the Seventh Army planning for the crossing of the Rhine River. The planning for this crossing was begun during the initial planning for the Southern France operation. Long-range estimates of special equipment were made, and the required requisitions were submitted to the Zone of Interior even before the invasion took place. Without these plans, which resulted in the procurement of the necessary special equipment, many critical items would not have been available when the actual crossing of the river occurred.

After the landings on the southern coast of France, the army advanced rapidly northward up the valley of the Rhone River. The Rhine River loomed on the

horizon as one of the major obstacles blocking the army's entry into Germany. The army commander was faced with the immediate problem of conducting a difficult campaign and, at the same time, preparing detailed plans for the Rhine crossing. This problem was appreciated at theater headquarters and intelligence reports on the river, as well as continuing assistance in the procurement of special equipment, were forthcoming. However, the development of a tactical plan to put forces across the river line was the army commander's responsibility. The corps and divisions of the Seventh Army were too heavily engaged to be planning for a river crossing still several hundred miles away. Concurrent planning, therefore, was impractical.

To initiate the tactical planning, a planning committee was appointed by the army commander. It consisted of several officers from each staff section. A special operations room was established for briefings and as a central repository for information on the Rhine River. It was not the intention of the army commander that the planning staff should isolate themselves from the rest of the staff and from their current duties. Rather, he appointed the committee to analyze the additional problems raised by the contemplated river crossing, in light of daily operations.

In an Ivory Tower

The following case history illustrates the effect of organizing a planning staff as a separate entity in a large headquarters.

In the winter of 1944-45, certain medium artillery battalions were authorized to exchange their 4-ton truck prime movers for the new M5 tractors. What would have been the effect on the river crossing plans if the staff planners, operating as a "cell" within a headquarters and paying little attention to changes in the equipment of units, had failed to note this exchange?

First, the artillery plan itself would have failed to take into account the increased

cross-country mobility of the medium artillery. This would have resulted in a faulty organization for combat.

Second, the ordnance plan would have failed to recognize the changed maintenance requirements. In addition, it would have failed to note that the basic load of the unit had changed which resulted in a new ammunition allocation to those units.

Third, the new personnel requirements for these units included mechanics with different training. The personnel plan would have had to anticipate a requirement for replacements with tracked vehicle maintenance experience.

Fourth, the supply plan would have failed to reflect the effect of the greater consumption of gasoline by the newly equipped units, as well as the procurement of replacement parts for the tractors. Eventually, unit replacements of assemblies and of entire tractors would have been required.

Fifth, the engineer plan would have failed to consider the increased necessity for maintenance on the roads where the tractor-equipped units moved, as well as greater bridge strengths required since the tractors are heavier than the trucks.

Finally, Intelligence would have failed to include the new vehicle in its identification of vehicles publications; the air force would not have been briefed on the appearance of the tractor to prevent its false identification as an enemy vehicle; drivers' schools would not have been started within the artillery battalions to teach the drivers the operation and maintenance of the tractor; and a new SOP for unit moves, required for artillery units, would not have been prepared.

All these aspects of a single "daily operational" matter would have been lost to the planner if he had been shut off from the rest of the staff.

The Seventh Army commander prevented such a situation from developing by keeping his planning staff inte-

grated with his operational staff. The army successfully executed its deliberate crossing of the Rhine River against intense enemy opposition. The army's success can be attributed, in part, to the commander's foresight in initiating planning for the river crossing long before that operation took place, so that the necessary special equipment was on the ground when it was required. With no change in staff composition or organization, a planning staff that was within the personnel limitations imposed by the requirement for security and, at the same time, familiar with current operations, had developed a basic plan. Control was facilitated by continued briefings and the development of a series of outline plans which, later, were expanded into final operation plans. Co-ordination was achieved through the use of a committee composed of members of the staff.

Conclusions

Planning is vital to any large organization, whether it be a civilian business



Mortar fire landing on concealed German fortifications near Strasbourg, France.

concern or the armed forces. Just as new model automobiles are planned for years in advance, successful operations are planned sufficiently far ahead so that the required men, equipment, and supplies are where they are needed, when they are needed.

"Ivory tower" planning deprives a planning staff of information concerning changes in the current situation or in equipment. Planning must be realistic; it must be based on current operations and capabilities. The organization of his staff will reflect a commander's concept of planning.

Control of planning requires a clear analysis of the mission, a planning schedule, and an outline plan which indicates the commander's concept of how he will

accomplish his mission. This provides the staff with a planning framework. When the outline plan has been approved, it can be expanded into the detailed operation plan with no loss of control.

Co-ordination of plans within and between services requires early and close liaison with the other commands involved. Every detail of all the plans must dovetail to provide a smooth-functioning, successful operation.

Modern war is like a disease that leaves scars on victor and vanquished alike. It is not enough that we plan only to win wars after they start—we must prevent them *before* they begin if the results of our plans are to be more than palliatives for a disease already contracted.

General J. Lawton Collins

Modern warfare depends upon complete integration of effort to achieve cohesion and unity of action. World War II demonstrated that joint action is the key to military success—a fact that will be even more evident in any future war. To achieve joint action in wartime we must have it in our peacetime training.

General Mark W. Clark

Waterborne Envelopments

The 77th Infantry Division at Ormoc Am

Lieutenant Colonel Delbert L. Bjork, *Infantry*
Instructor, Command and General Staff College

This is the second of a series of two articles on the subject of waterborne envelopments. The first of the series was devoted to definitions, a clarification of the Army's viewpoint on amphibious operations, and capabilities of waterborne envelopments as a means of increasing logistical flexibility and tactical mobility. It was published in the February 1951 issue of the MILITARY REVIEW.—The Editor.

IN THE first article of this series, it was indicated that our present-day study and doctrine regarding amphibious operations concerns itself with just two types: the invasion and the seizure. Both of these operations are usually long-range, large-scale, complicated, and extremely vulnerable to atomic warfare. A plea was made [in the first article] that we keep alive the knowledge and experience gained in World War II regarding the use of waterborne envelopments to increase tactical mobility of ground troops.

To assist in the study of waterborne envelopments, the amphibious seizure of Ormoc by the 77th Infantry Division was

selected as an example. The following narrative of this operation is presented to answer the following questions:

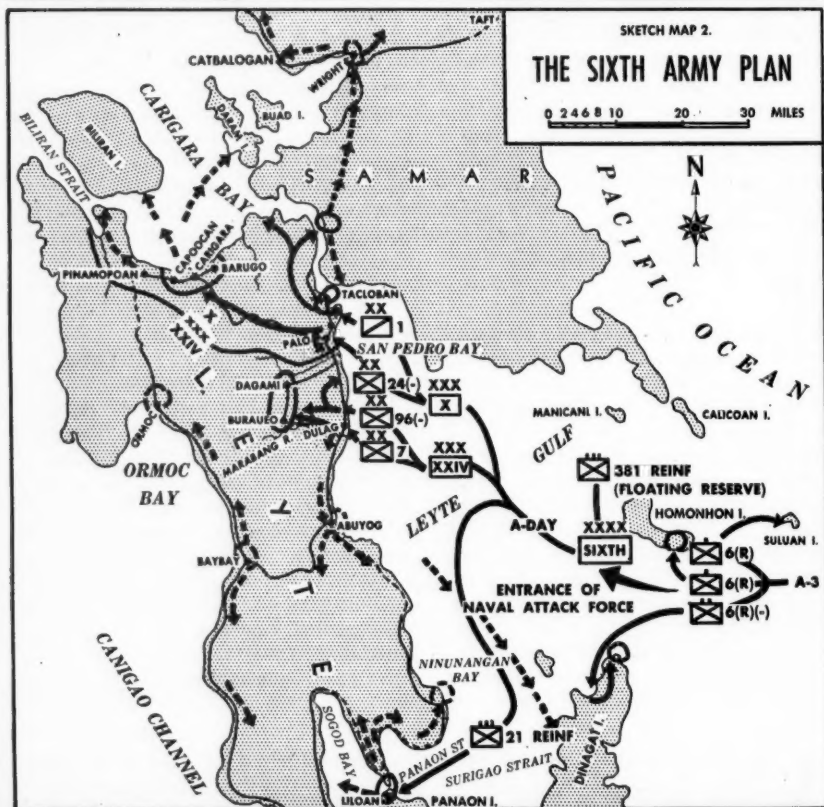
1. Did the waterborne envelopment provide a faster and better route to critical objectives deep in the enemy rear, and what effect, if any, did this have on the main effort being made on Leyte?
2. What special problems was the 77th Infantry Division forced to solve in order to conduct this operation?
3. What is required by an infantry division before it can conduct a waterborne envelopment?

General Situation

The general situation during the early phases of our offensive in the Pacific, in 1943-44, is shown in Sketch Map 1. A two-pronged attack was being vigorously pressed against the Japanese. The objective of these two routes of advance was to gain control of the Luzon-Formosa-China Coast triangle in preparation for the blockade, aerial softening, and eventual invasion of the Japanese homeland.

By late summer 1944, General MacArthur, carrying out his directive, was

The historical example of the operations conducted by the 77th Infantry Division at Ormoc Bay is a concrete illustration of the characteristics, capabilities, and limitations of waterborne envelopments



making preparations for the seizure of Morotai; the final, preliminary step for the planned assault on Mindanao. Admiral Nimitz, in the Central Pacific, was preparing for the invasion of Palau. During the covering carrier air strikes against the Visayas by our Third Fleet, indications of great weaknesses in the enemy's defensive dispositions in the Central Philippines were uncovered. On the basis of this new information, it was decided to by-pass Mindanao and Yap and assault the island of Leyte, despite the fact that it was beyond the range of fighter aircraft based on Morotai. The projected timetable was also advanced about 3 months: the new target date became 20 October 1944.

On 20 October 1944, the Sixth Army, composed of two corps, landed, four divisions abreast, on the main east beaches of Leyte. A beachhead was established against moderate resistance. Sketch Map 2 shows the general plan of the landing.

It was evident, from the successes achieved during the first 5 days of fighting, that the Japanese were unprepared to oppose an invasion of the Philippine Islands at Leyte. Quickly realizing the disastrous strategic consequences of a successful invasion at this point, the enemy took prompt steps to utilize every available resource against our landing.

The first indication of violent Japanese reaction to the invasion was the commitment of all available sea and air forces against our assault shipping and beachhead. This culminated in the naval battle for Leyte Gulf or the "Second Battle of the Philippine Sea," which was fought during the period 23-26 October 1944. Sketch Map 3, on page 53, portrays this sea battle, the greatest of World War II.

The assault forces ashore continued their successful operations, despite the fact that all air and naval support of ground operations had been diverted to meet this major enemy threat. The break-

out from the beachhead was completed, and the planned mopping-up of the Island was under way. By 1 November, it was evident that the enemy had decided to make an all-out effort to hold Leyte. Air strikes were intensified, suicide (*Kamikaze*) tactics were adopted, and pilots crash dived their planes into our naval craft with deadly accuracy. Enemy reinforcements for the beleaguered 16th Division arrived in great numbers. By 3 November, new units totaling 22,000 men had landed and by the middle of the month 28,000 more had arrived. Additional reinforcements were on the way.

The loss of four major airfields by flood, caused by heavy rains during the typhoon season, restricted our Fifth Air Force to one airfield near Tacloban. Little air support from adjacent islands was available due to the excessive distance the planes had to travel. Naval air, which supported the assault landings, was now committed to critical missions in the Ryukyus. Our limited land-based air capability had the dual mission of obtaining local air superiority over the objective area and of striking against the Japanese shipping reinforcing the Island. The all-out, bitter struggle for the Island was carried on under these disadvantageous conditions.

During November, enemy reinforcement of their forces on the Island continued. Our air was able to inflict heavy damage on Japanese convoys, but troops continued to arrive, in considerable numbers, by small boat and barge operations conducted at night. Substantial American reinforcements also poured into Leyte, as three divisions (two infantry and one airborne) were diverted from other missions and rushed into the fight. All units were committed, but the increased enemy strength and the extremely rugged jungle-covered mountains made progress slow and difficult. The extent of our progress, as of 15 November 1944, is

represented by the arrows on Sketch Map 4. At this point, forward progress stopped: the situation was deadlocked.

Waterborne Envelopment Planned

On 14 November 1944, a plan to execute a waterborne envelopment in Ormoc Bay, whereby one division was to be landed on the west coast of Leyte, was conceived. The objective of this maneuver was to cut the enemy lines of communication by seizing his beaches and isolating his forces from the support and reinforcements being received from adjacent islands. The enemy force would be enveloped completely and his destruction assured.

Supporting naval forces, however, could not make available sufficient assault and resupply shipping to mount and maintain such an operation at this time. In addition, the local naval commander considered that the friendly air support was entirely inadequate to ensure the safety of any convoys entering Ormoc Bay, and that severe losses would ensue due to the enemy's suicide tactics. Accordingly, the plan was laid aside.

The battle in the rugged mountains of Leyte continued. By 3 December, our positions on the ground had changed only slightly, but the Fifth Air Force had built up its capability so that heavier damage against enemy amphibious shipping was effected, and local air superiority could be maintained for short periods.

The propitious moment for mounting the previously considered envelopment in Ormoc Bay had arrived. The shortage of amphibious shipping was alleviated by a 10-day delay in a planned operation against Mindoro, thus making available the required shipping. Accordingly, the Commander, Sixth Army, directed that: "The XXIV Corps, beginning on 5 December 1944, make its main effort on the left to defeat the enemy in the Ormoc area, reinforcing its left by landing one divi-

sion, with naval and air support, in the Ormoc area." The tactical situation as of 4 December 1944 is shown on Sketch Map 5.

The Sixth Army attached the 77th Infantry Division to the XXIV Corps for this operation. This division, which had been at sea headed for a rehabilitation area in New Caledonia, had arrived at Leyte on 23 November, aboard transports that were not combat loaded. After a hurried unloading, the division was scattered over a wide area, employed on a variety of missions. Warning orders for the landings near Ormoc were received on 1 December, and the assembly of the division was started at once.

Problems of the Division Commander

Let us digress momentarily and consider some of the problems which faced the 77th Infantry Division at this time.

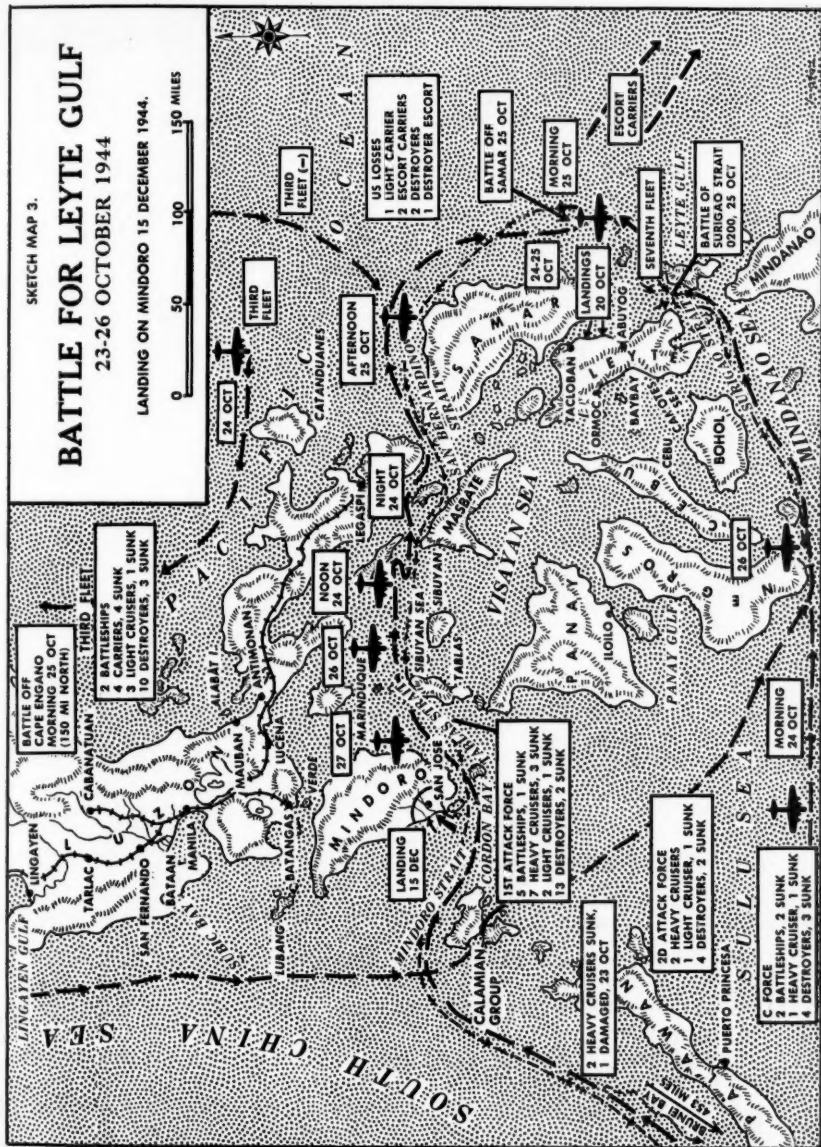
Planning.—With only a 10-day delay in the Mindoro operation, naval amphibious shipping would be available for a comparatively short time. Plans had to be made at top speed, to take advantage of every available day and to avoid setting back the date for the landing. The task of assembling and embarking the landing force was undertaken, concurrently, by the 77th Division staff and all subordinate units. All possible details pertaining to the assembly and preparation for loading were delegated to subordinate units for the staff was concerned with other planning. Complete confidence in the ability of subordinate units to do the job was required; confidence that was based on the knowledge that the division was thoroughly trained and could progress with loading and landing preparations with a minimum of supervision.

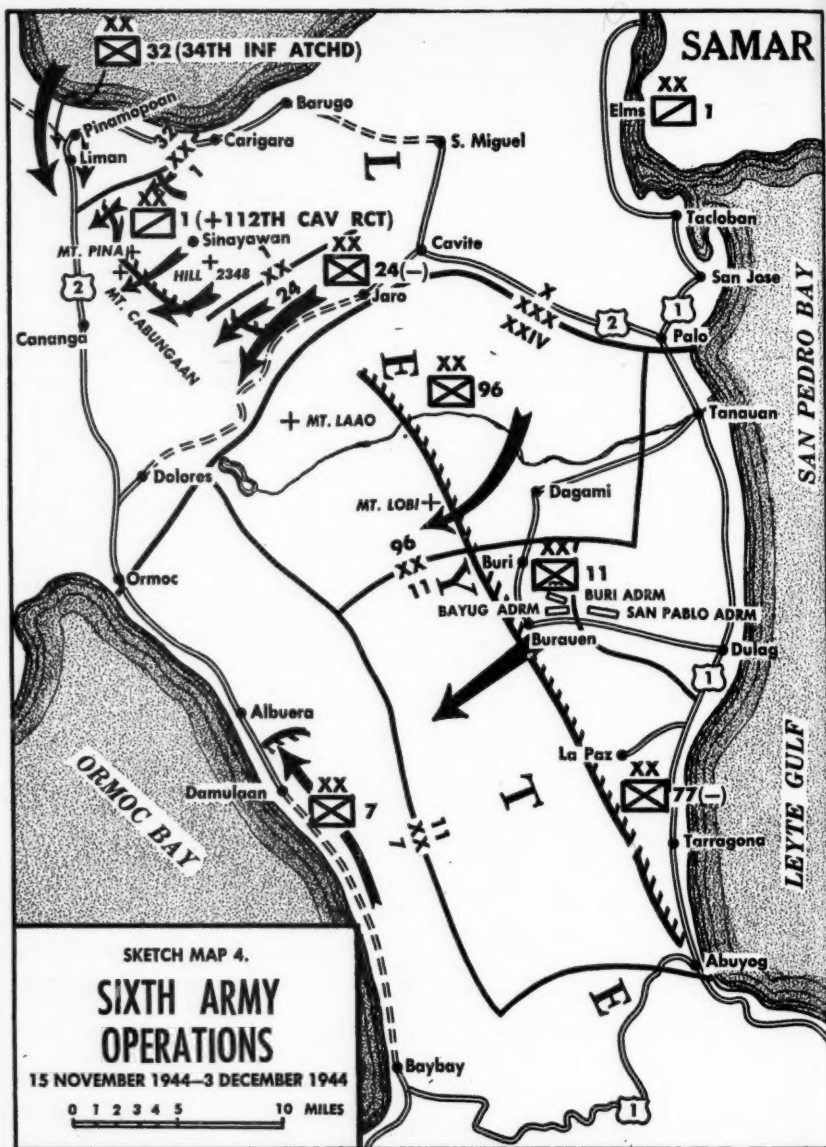
This is an example of where prior planning paid dividends. The 77th Division commander had foreseen the possibility of the employment of his forces on such a mission, and information had been gathered and studies made of the

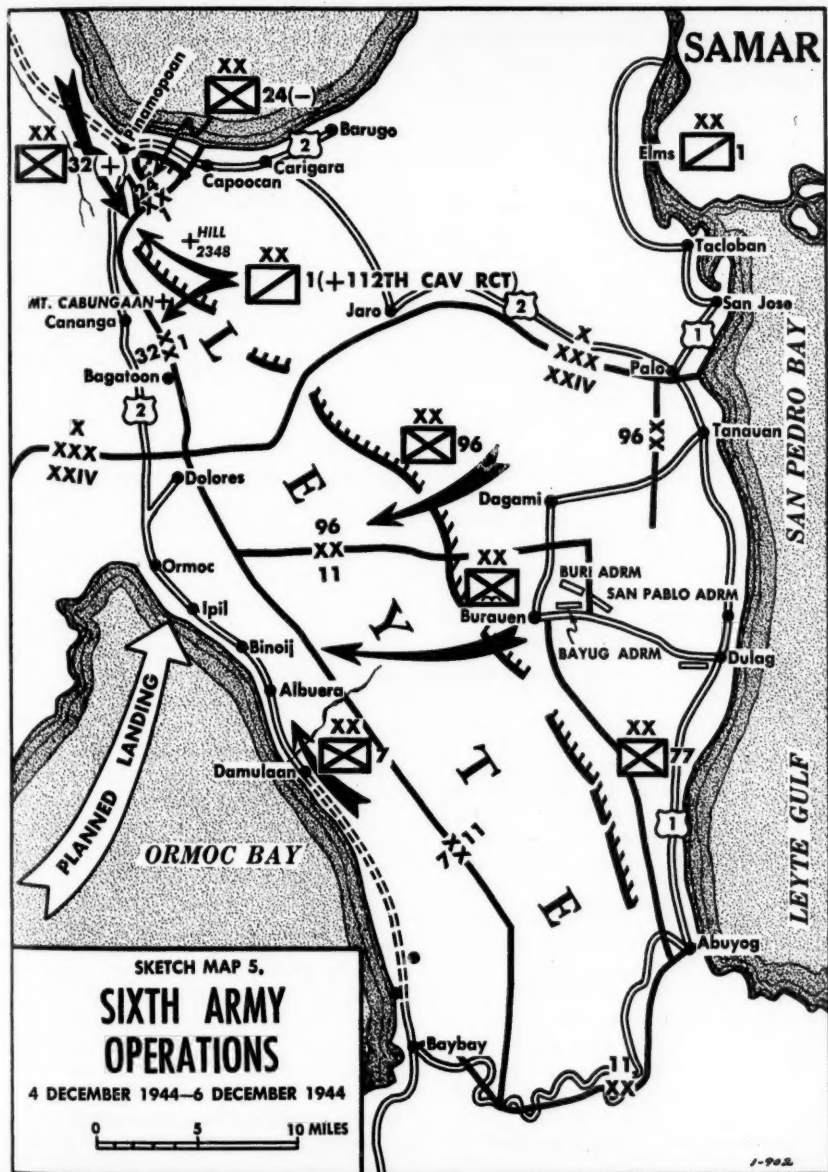
23-26 OCTOBER 1944

SKETCH MAP 3.

LANDING ON MINDORO 15 DECEMBER 1944.







area before the warning orders were received. The division commander was able, therefore, to recommend the exact spot at which he wished to make his landing. This allowed the naval force commander to initiate his planning without delay.

Assembly of the Task Force.—Usually, this would be one of the minor problems confronting a division commander. The 77th Division commander, however, had many additional difficulties with which to contend. The division was scattered over a wide area protecting the command post's higher headquarters, performing security and mopping-up missions, and preparing for tactical employment in the rugged jungle-covered mountains of Leyte. Torrential rains had washed out roads and destroyed communications. Men could be marched with difficulty, but trucks and equipment had to be towed by tractors through the sunken roads and ferried over the numerous, flooded streams.

Loading and Landing Plans.—The preparation of the loading and landing plans was complicated, in this situation, because of the inability to obtain the desired shipping.

Landing ships and craft for the operation were limited as to type and number. They included 8 high-speed transports [destroyer conversion (APDs)] carrying some landing craft, vehicle, personnel (LCVPs); 25 landing craft, infantry (LCIs); 10 landing ships, medium (LSMs); and 4 landing ships, tank (LSTs).

With this shipping, the following landing force could be lifted: seven infantry battalions; one battalion of light artillery (105-mm); one battery of antiaircraft artillery; one chemical mortar company (4.2-inch); one battalion of amphibious tracked landing vehicles [LVT(4)]; and the necessary headquarters and service troops.

In addition, it was planned to place one battalion of field artillery in the 7th Di-

vision's zone so that it could fire on the beaches during the assault landing. The 7th Division's artillery would also be available to help in an emergency.

Air superiority over the objective area was limited to a period of 3 hours. It was essential, therefore, that the naval element of the task force depart from the objective area 2 hours after H-hour.

In brief, the division commander had to accomplish the following:

1. Assemble the division, make plans for the assault landing and load available shipping in 6 days.
2. Land the forces available for an assault on a hostile shore, making full use of the inadequate shipping assigned to him.
3. Carry ashore enough supplies to last 2 days, over and above individual reserves, within H plus 2 hours.
4. Take special measures to compensate for the lack of air superiority.

Assault Plan

The plan for the assault landing of the 77th Infantry Division was as follows:

1. A lightly defended beach, Deposito, was selected for the landing.
2. Two battalions were to be landed in the assault. They were embarked aboard the eight APDs and employed LCVPs for the assault of the beach.
3. The remainder of the infantry (five battalions) was embarked aboard LCIs and landed directly on the beach.
4. Artillery, trucks, and the tanks organic to the infantry units were to be loaded on LSMs and disembarked directly on the beach.
5. Supplies for 2 days were to be loaded aboard the LVTs which were to be transported aboard the LSTs. The LVTs were then to be discharged in the transport area and held afloat until space was available ashore. This would allow all shipping to unload and depart within H plus 2 hours.

The Actual Assault

The plan, as developed, was carried out successfully. By noon, 6 December, the division had completed its embarkation, and the overwater movement around the south tip of Leyte to Ormoc Bay was under way. (For the route taken see Sketch Map 6.)

During the night, heavy enemy air activity was reported over the Island, but no strikes were directed against the convoy proceeding under the cover of darkness. Reports of enemy paratroop landings on the airfields near Burauen and, simultaneously, reports of a large enemy convoy in the Visayan Sea, headed for Ormoc Bay, were received. Our night-fighters and torpedo boats directed their efforts against the enemy convoy and, by dawn, our task force destroyer screen made contact. The air cover for both task forces tangled, and confused heavy fighting was under way at H-hour (0630). Due to a heavy rainstorm and poor visibility, landings were delayed for one-half hour—to 0700.

In the air and sea battle which ensued, two of our destroyers were damaged and one sunk. By 0900, after the bulk of our force was landed successfully, the first of a series of strong enemy air attacks was directed against our naval task force. The landing operations continued and were completed, without loss, but the heavy air attacks were maintained against the departing ships. Four ships were lost, before the convoy completed its return voyage.

The assault troops met only light resistance ashore and pushed rapidly across the beaches to their initial objectives. A shallow beachhead was secured and patrols were sent out; they met only scattered resistance. Complete tactical surprise had been gained against the enemy on the ground. The 7th Infantry Division, on the south, reported large gains and indications of an enemy collapse. Ele-

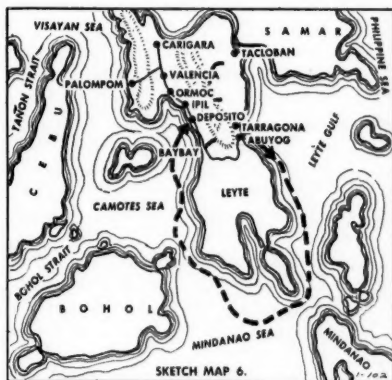
ments of the 11th Airborne Division, however, were making slow progress against strong enemy forces in the rugged mountains to the east.

Change in Direction

The original plan, to direct the main effort south in order to gain contact with the 7th Infantry Division, was changed, and the 307th Infantry Regiment attacked to the north.

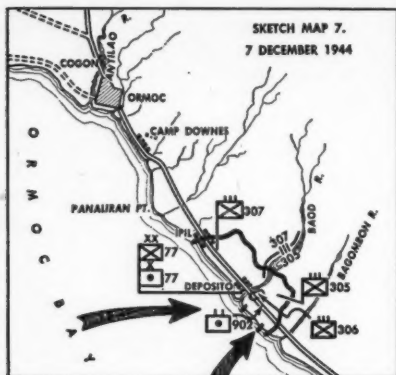
The enemy began to direct air strikes against the beachhead. To counter this enemy air action, the supplies for 2 days of fighting, which had been loaded on LVTs, were moved north, up the beach. Two enemy air strikes hit the original beachhead: there was no target. The mobile supply dump plan was "paying off" again.

By 1600, the sugar mill town of Ipil was seized, and preparations for the night defense of the beachhead were completed



by nightfall. (See Sketch Map 7.)

On 8 December, the division continued its attack. North of Ipil, enemy resistance stiffened. An entrenched enemy, on the ridge at Camp Downes, stopped the attack. The beachhead, again, was moved up the beach, and all installations, less



the medical and some quartermaster installations, were moved to Ipil. Supplies, still aboard the LVTs, moved by water. These amphibious tracked vehicles not only transported but also delivered supplies, when called for, directly to regimental and battalion dumps, thus increasing the flexibility of the logistical support being provided.

At 0400, 9 December, the resupply convoy arrived. It carried not only much needed supplies but other elements of the division, previously left on the far shore.

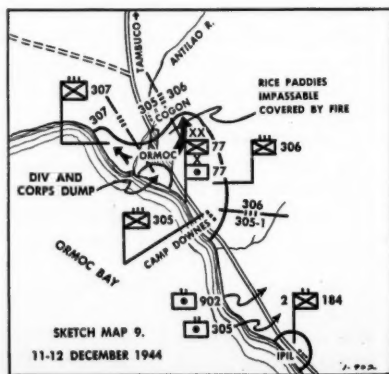
At dawn, the attack to the north was pressed vigorously for enemy reinforce-

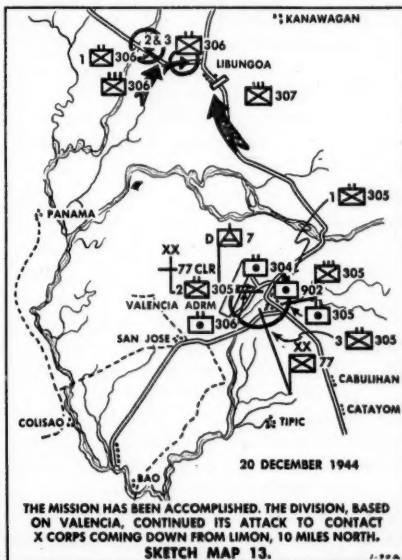
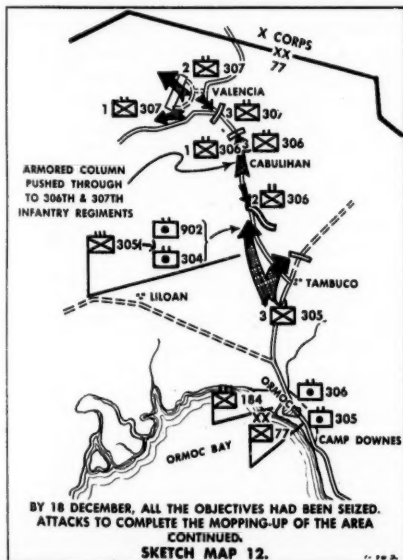
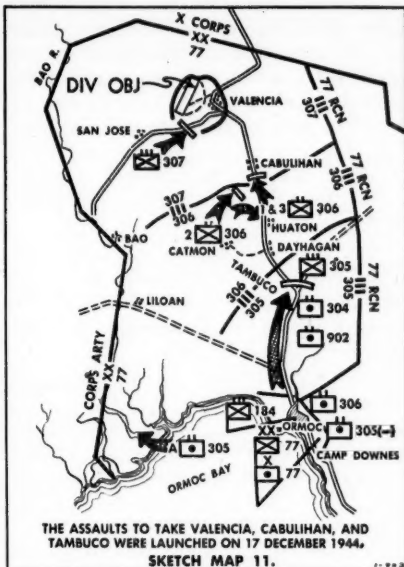
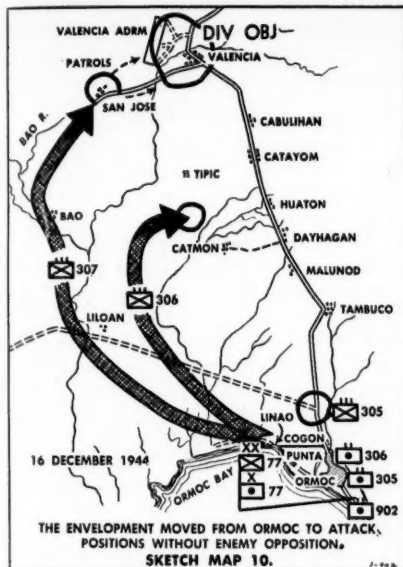
ments had been observed heading for Ormoc. It was imperative that this important strong point be seized before the enemy could rush in enough reinforcements to defend it successfully.

On 10 December, a second regiment was committed to the main effort. The 306th Infantry enveloped the town (Ormoc) from the east, and after a day of fighting, Ormoc was seized. The plan of attack employed, and the beachhead held, on 10 December, is shown in Sketch Map 8.

The action of the division, on 11 December, consisted of consolidating the gains made up to that time. Beachhead installations at Ipil were moved to Ormoc. A battalion from the 7th Division joined the 77th Division and was used to defend supply dumps and medical installations that could not be moved. By 12 December, the beachhead was organized as shown in Sketch Map 9.

Heavy enemy counterattacks were launched against the division starting on 11 December. The enemy reinforcements to hold Ormoc had arrived, but too late. The fighting was bitter around a stone house in the vicinity of Cogon. On the night of 11-12 December, an enemy convoy carrying supplies and reinforcements entered Ormoc Bay and headed for





a pier in Ormoc. Our fire was held up until the enemy's vessels came within machine-gun range. Then every weapon available opened fire. In the midst of the fight, our own resupply convoy was observed approaching the harbor. A small boat was dispatched, with an American flag, to guide our naval convoy into Ipil. It worked. The enemy convoy was sunk: ours was landed.

Thus far the operation was successful, but before victory was assured the enemy forces blocking Sixth Army's main effort in the north and in the mountains to the east had to be destroyed.

The 77th Division, on 16 December, jumped off from Ormoc and, in a wide, deep, enveloping maneuver across swamp and river, seized Valencia. Sketch Maps 10, 11, 12, and 13 portray this action.

Action Completed

With the main force of the enemy surrounded, there was the mopping-up and the final sealing off of all routes of escape or reinforcement to be accomplished. On 21 December, contact was made with the X Corps in the vicinity of Cananga. This closed the trap behind the Japanese main body of troops still fighting bitterly in the mountains to the east.

For the 77th Division, there was one more enemy port to close—Palompon. It was evident that the fight over the mountains, along the only existing road, would be long and costly. Again a plan was conceived to confront the enemy with a waterborne envelopment. A reinforced battalion of infantry was loaded aboard LVTs and, on the night of 24 December, took off for Palompon. After a 44-mile, 10-hour, overwater journey, the battalion landed, seized its objective, and continued inland to make contact with our troops. This rapid movement took the enemy completely by surprise, and their last useable port was lost.

Sketch Map 14 provides a resumé of

the complete operation, to include the landing to take Ormoc, the envelopment to seize Valencia, and all subsequent operations.

Techniques Employed

It is appropriate, at this time, to indicate some of the unique techniques employed by the 77th Infantry Division during this operation.

1. The employment of LVTs to solve the critical supply problems has been mentioned several times in this article. It is important to emphasize that LVTs rarely will be available, in the future, for such employment. Special equipment of this type requires a high degree of maintenance and will be allocated carefully by higher headquarters in order to conserve its effectiveness for major assault landings. Other amphibious vehicles can be used, however, as for example, the DUKW.

2. The technique of using mobile logistical installations to receive supplies when operating deep in enemy territory can be applied, in other ways, to future operations. For instance, we can use temporary drop zones for air supply, a technique which was employed in our Burma operations and one which has been the subject of much study since then.

3. The all-around security required by operations deep in enemy territory was solved by forming tight, close perimeters, or "fortresses." This was a common technique developed for the defense, at night, of small units operating in the South Pacific during the past War. It has an application in a war of the future, when distances between units may be so great that a linear defense or offensive lines will be impracticable. Care must be taken to provide proper dispersion within each "fortress" or perimeter, to ensure that excessive casualties are not inflicted by enemy artillery.

4. The small beachhead seized and the narrow frontages employed, early in the

operation, are excellent examples of taking advantage of enemy weaknesses. It was known that the enemy would be able to divert only a small amount of artillery and mortar fire against the troops landed on their flank. The threat of mass infantry counterattacks against any one point of the beachhead was our most dangerous threat. On that account the beachhead and front lines were shortened and rear areas congested to a degree that would be dangerous if employed against an enemy with supporting weapons comparable to our own.

5. The seizure of a small beachhead enabled the commander to so organize his forces as to provide him with a compact tactical formation from which his troops were capable of attacking, in strength, in any direction selected.

Requirements for Waterborne Envelopments

Before a commander can conduct a waterborne envelopment the following are prerequisites:

1. *Adequate and suitable shipping.*—There are two sources of shipping in our military establishment. These are the Navy, and the boat battalions of the amphibious support brigade.

2. *Assault forces, adequately trained.*—These forces must be well versed in the techniques of loading and unloading the craft and in conducting assault operations on the far shore.

3. *Additional fire support and means to direct it.*—This includes the use of naval gunfire, air support, and near shore artillery.

4. *Additional logistical support units and specialized equipment.*—The task force must be equipped to carry out its mission, and must be self-sufficient. The limiting factor is the amount of shipping available to transport troops and matériel.

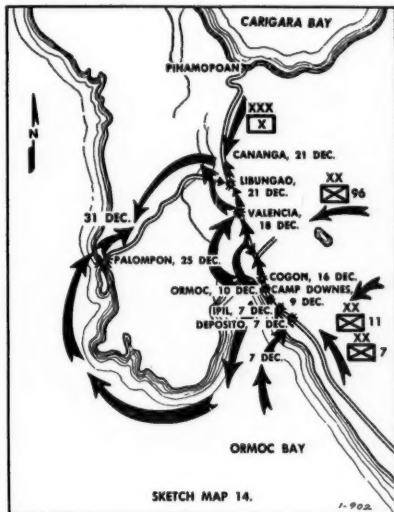
5. *Additional combat troops.*—Other

combat units, as required, must be attached so that the task force organization is capable of carrying out its mission successfully. The additional units must also be trained in the techniques of conducting amphibious operations.

6. *Control and freedom of movement.*—The capability of moving the forces afloat without suffering undue losses from enemy air or naval attack is essential. This makes local air superiority and control of the water routes being traveled a "must."

Conclusion

A waterborne envelopment, just as any other envelopment, is a maneuver by which the enemy can be attacked at points of the attackers' choosing, and forces the



enemy to fight at a disadvantage. It produces decisive results by seizing critical objectives deep in the enemy zone, destroys rear areas vital to the support of enemy combat elements, and forces the enemy to fight in more than one direction. The exploitation phase of a successful water-

borne envelopment consists of pursuing the enemy, turning him from his enveloped positions, or destroying his encircled forces in place.

We must continue to develop all pos-

sible means of maintaining logistical flexibility and tactical mobility.

Waterborne envelopments provide the commander with an additional method of achieving victory.

NEXT MONTH

Main Articles

The seven main articles include *Thoughts on the American Airborne Effort in World War II* by Doctor James A. Huston, Assistant Professor of History, Purdue University; and *Deliberations on Armor* by Lieutenant Colonel Frank F. Carr.

Foreign Military Digests

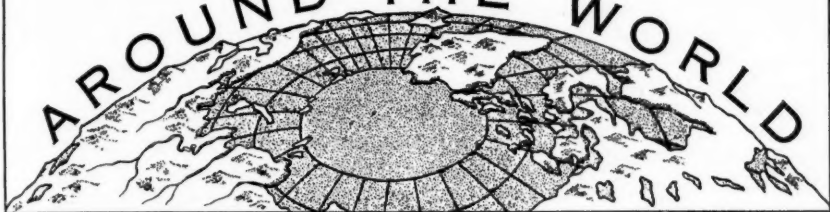
The foreign digests include "The Invasion of Italy" from the *Australian Army Journal*; and "Balanced Forces and Western Defense" from the *Royal Air Force Quarterly*.

Books for the Military Reader

Reviews of *The Soldier's Load and the Mobility of a Nation* by Colonel S. L. A. Marshall; and *War and the Minds of Men* by Frederick S. Dunn are included.

MILITARY NOTES

AROUND THE WORLD



UNITED STATES

High-Altitude Bomb Tests

Valuable information on bombs and bombing systems is being obtained through high-altitude bomb drop tests from *B-36* bombers.

Bombs weighing up to 12,000 pounds are being dropped from approximately 8 miles above the earth—the highest altitude from which bombs of this size have ever been dropped.

When the plane arrives over the precision bombing range and releases one of the dummy bombs, an electrical impulse from the plane automatically starts a battery of cameras spotted around the target area. These cameras follow the bomb until it hits the ground.

From the pictures that result, ordnance experts study the bomb's rotation as it plunges earthward and the path it follows.

The experts also measure how many feet into the ground the bomb nose penetrates after its 8-mile fall. This is used to determine how much damage would be caused by a live bomb similarly dropped.

When the series of tests are completed and the data analyzed, ordnance experts will know whether any changes are needed in order to make the bombs more effective in high-altitude drops.—*Armed Force.*

Protective Visor

The US Air Force has developed a spherical visor that virtually glues a crash helmet to a flier's head in bailouts of more than 500 miles an hour.



The new visor for high-speed bailouts.

The new visor ensures a pilot that his helmet—with its life-giving oxygen equipment—will stay with him in high-speed escapes from jet aircraft. Before the visor's development, no protective helmet would remain on in bailouts that approached the 400 mph mark.—Air Matériel Command release and photo.

Communications Study

Better communications in the Arctic, vital if all-out war comes, should result from studies of the aurora borealis and the upper atmosphere now being made in Alaska.

Normally, brilliant aurora displays mean interference with radio reception, and often result in blackouts. The new information is making it possible to choose a frequency that will allow radio communications otherwise impossible.—*Science News Letter*.

War Gases

The deadly war gases—nitrogen mustards—are being tested for lifesaving uses.

These gases are being tried in the treatment of leukemias, in which there is an overproduction of white blood cells, and in Hodgkins' disease and lymphosarcoma, which are fatal forms of cancer.

Another chemical warfare agent—diisopropyl fluorophosphate—has been found useful in the treatment of myasthenia gravis, a condition characterized by extreme weakness, and in glaucoma, a blinding disease caused by increased fluid pressure in the eyeballs.—*The New York Times*.

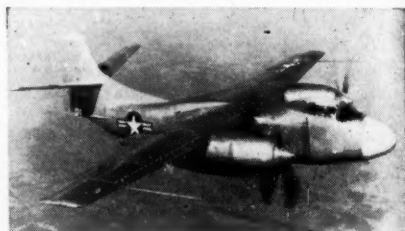
Fire Power

The Army announced recently that, man for man, United States and Soviet ground forces had about equal fire power. Furthermore, the quality of design and manufacture of Soviet weapons is good and compares favorably with United States weapons.

The fire power of United States infantry and armored divisions is about 50 percent greater than that of Soviet divisions. However, a Soviet division normally consists of 10,000 to 12,000 men while a US division has about 18,000. This would put fire power, man for man, on about equal terms.—*The New York Times*.

Heaviest Carrier Plane

The Navy's latest and heaviest carrier aircraft, the *AJ-1*, recently completed suc-



The Navy's new *AJ-1* carrier plane.

cessful take-off and landing tests on the carrier *USS Coral Sea*.

The *AJ-1*, designed for high-speed attack missions from aircraft carriers, has a top speed in excess of 350 miles an hour and carries a crew of three. Unloaded, the plane weighs more than 17 tons.—Department of Defense release and photo.

Malaria Cure

Tests of a new drug on volunteer mosquito-bitten Illinois prison inmates have led to a "practically 100 percent cure" for recurring malaria.

The new drug, primaquine, which is used in combination with quinine, is four times as effective as any other antimalarial drug yet tested.—*The New York Times*.

Air-Ground Training

The Army took steps recently to strengthen its field forces for combined air-ground operations with the establishment of an Army air-support center at Fort Bragg, North Carolina.

It is anticipated that lessons learned in Korea will be the basis for training, as well as a continuing study of doctrine, techniques, and tactics.—*The New York Times*.

Radar Screen

Work on an 85 million dollar radar warning "curtain" around the United States and Canada is being speeded up and may be finished this year.

In the interim period, an emergency air force radar network covering the main industrial and security centers now is operating around-the-clock against any possible sneak attack by enemy bombers. The first of 24 key civil defense observation posts also is under construction. All will be manned full time by civilian volunteers when finished.—*The Christian Science Monitor*.

Frostbite Treatment

Recent experiments show that the best method for treating frostbite is by fast thawing and with injections of heparin, an antiblood clotting chemical. This new method is contrary to the old method of rubbing frozen parts with snow which, experiments show, tends to increase the chances of gangrene.

The ideal temperature for thawing is one slightly above body temperature. Too much heat is bad.

The use of the antiblood clotting chemical prevents thrombosis or clot formation in blood vessels which ultimately leads to gangrene.—*Science News Letter*.

New Jet Engines

The General Electric Company is building two of the Nation's most powerful jet engines—the J47-GE-17 and the J47-GE-23. One, the J47-GE-17, is equipped with controls that virtually "think" for a pilot. This engine is completely "anti-iced" to operate successfully under the severest icing conditions and has a special ignition system that makes starting possible at altitudes as high as 50,000 feet.—*Armed Force*.

New Underwater Camera

The Navy has developed the first completely mobile underwater motion picture camera that is entirely independent of surface assistance.

The camera is operated by a diver-photographer, equipped with an "aqualung," which is a self-contained diving unit.



The United States Navy's new mobile underwater camera.—*Science Service photo*.

The photographer, with "swim fins" on his feet, is able to swim with the camera in any direction and to depths of about 200 feet.

The camera has external controls for the lens diaphragm, focus, and start-stop switch. It weighs 107 pounds in the air and can be adjusted to have positive, negative, or neutral buoyancy under water. It can be released to rise freely to the surface.—*The New York Times*.

K-9 Corps

The Army's famed K-9 Corps, which dwindled after the War, is being rebuilt and now numbers nearly 900 of the finest dogs available.—*The New York Times*.

New PT Boat

The Navy's first all-welded aluminum vessel was launched recently at Annapolis, Maryland. Designated *PT-811*, the new ship is the forerunner of an entirely new class of patrol torpedo boats slated to replace the famous "PT splinter fleet" of World War II.—News release.

Stroboscopic Device

The Naval Ordnance Laboratory has developed a new stroboscopic device which will "freeze" motion as rapid as 300,000 movements a second.

Used with high-speed cameras, it will aid ordnance research by making possible improved photographs of missiles as they leave a gun barrel.

When operated continuously, the new stroboscope also will permit direct visual observation of rapidly operating machinery.—*The New York Times*.

Replacing Jeeps

The Air Force is replacing all jeeps now being used in the continental United States with commercial-type vehicles. However, jeeps still will be used at overseas Air Force bases where their ruggedness and special capabilities are needed.

This change will save approximately 79 million dollars by the end of the next fiscal year.—Air Matériel Command.

The cost of making plutonium, the explosive element of the atomic bomb, has been cut in half during the last 4 years.

The production of synthetic rubber in the United States will hit a rate of 600,000 tons a year by the end of 1951. Production rate of synthetic rubber in January 1950 was only 220,000 tons a year.

Gasoline now can be made from coal shale for only a cent a gallon more than the cost of producing it from crude oil.

Oversized Dressings

The Army has developed new oversized dressings for burns and wounds. These new dressings have an inside or wound layer of highly absorbent fine mesh gauze,



One of the Army's new oversized dressings.

which reduces irritation to wounds, and an outside, nonabsorbent layer which prevents bacteria from entering the wound. These qualities permit the dressings to be worn for as long as 14 days, whereas present-type burn dressings must be changed every day or two, depending upon the degree of the burn.—Department of Defense release and photo.

Military Briefs

The United States has sent more than 350 aircraft, 5,000 vehicles, and several hundred tanks to Allied countries under the military aid program.

Approximately 9,000 military personnel from foreign countries will be trained in the United States before the end of the year. The training is primarily in the use of US equipment being supplied to friendly nations. About 1,600 military personnel from Allied countries have already completed such training.

Airline Mobilization

The chairman of the Civil Aeronautics Board announced recently that the Government is preparing plans for immediate mobilization of the Nation's airlines in the event of war.

In a military emergency, every form of civil air power would be used, with civilian transports converted to military use.—News release.

Jet Tests

The Air Force has successfully completed an accelerated service test of the first American-built jet fighter with afterburning equipment. (MILITARY REVIEW, May 1949, p. 64, and Dec 1947, p. 71.) The afterburner, which enables a jet to climb to high altitudes in much less time than required by an ordinary jet, was used much of the flying time. This afterburner is a simple grid in the tail cone of a jet, and fuel sprayed over it gives greater thrust.—*The New York Times*.

Aerial Delivery

The US Air Force can now drop supplies to ground units at the rate of almost a ton a second.

During World War II, a maximum of only 800 pounds could be dropped in one pass over a combat area. Now, with a new quick-ejection method, made possible by an overhead monorail system installed in cargo planes, the Air Force can put 5 tons of cargo in a 1,500-foot area, in one 7-second pass.—Air Matériel Command.

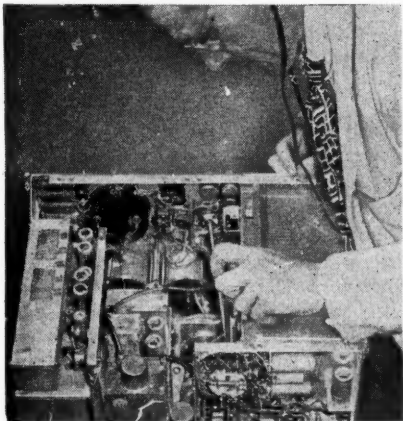
South American Aid

The United States is preparing to sell surplus warships to South American countries whose navies might help the United States fleet in the event of war.

United States vessels available for sale include destroyer escorts and destroyers. The number was not disclosed.—News release.

'Noise Meter'

The Army Signal Corps has perfected a "noise meter" which someday may help eliminate noise heard on radio and television sets. It is used to measure unintentional interference or radiations pro-



Army Signal Corps' new "noise meter."

duced by electric fans, oil burners, automobile ignition systems, refrigerators, and dozens of other household and industrial products. The meter is the latest advance in the Signal Corps constant research to develop suppression methods capable of muzzling interference or noise.—News release.

New Map Making Process

Faster production of military maps is promised by a new technique developed in co-operation with the US Army Map Service. It provides a method for making color separation negatives on contact from line copy. In printing color maps, a separate negative and plate are required for each color on the map.

Development of this process is expected to save time and labor.—*Science News Letter*.

CANADA

Marine War School

The establishment of a new joint services Marine Warfare School at Halifax will assist Canada in her role as one of the protectors of shipping routes to Europe under the North Atlantic Pact.

The new school will concentrate on co-operation between the Navy and the Royal Canadian Air Force in hunting down and destroying enemy submarines.—*The New York Times*.

Air Force Increase

Canada's Defense Minister has announced that Canada will add 350 fighter planes to its air arm and revive its wartime training schools for navigators and other airmen. He stated also that Canada has bought 100 *Mustang* fighters from the United States as a stop-gap measure and would spend 100 million dollars for 250 more jet fighters.

The *Mustangs* will be used for the immediate formation of a new fighter squadron to bolster the Nation's over-all program for protection against any enemy attack.

The Defense Minister also ordered the Royal Canadian Air Force to cut its training time for air crewmen and increase by 50 percent the strength of the air cadet league.—*The New York Times*.

AUSTRALIA

Rocket Range

The Woomera Rocket Range in South Australia is expected to be ready for full-scale tests with guided missiles late this year. By then, all sections of the establishment—scientific, design, and administrative—should reach planned strength. It is anticipated, also, that certain tests might be transferred to Canada to determine if the scientific results of experiments are the same in the sub-Arctic as in the hot conditions of Woomera.—*Australian Weekly Review*.

FRANCE

War Casualties

According to a recent Government announcement, French casualties in World War II amounted to 576,000. This included 198,000 killed in action from 1940 to 1945, 9,844 shot for resistance activities, 37,006 killed in Maquis operations, 59,225 air raid victims, and 182,000 persons deported for political or religious reasons who died in captivity.—*The New York Times*.

Increase Military Service

France, by a vote of 417 to 185 in the National Assembly, decided to extend compulsory military service from 1 year to 18 months as a fundamental move in her rearming program.

Only the Communists voted against the measure. They fought it on the ground that the increased military service was in preparation for war against the Soviet Union.—*The New York Times*.

SAUDI ARABIA

Mediterranean Pipe Line

With the opening of a new 753-mile pipe line from Saudi Arabia to Sidon, on the Mediterranean, oil was brought closer to European markets.

The new line, built over a 3-year period and at a cost of 250 million dollars, eliminates a 3,500-mile tanker voyage around the Arabian Peninsula.

The project required 1,068 miles of 30- to 31-inch line and more than 265,000 tons of steel.—News release.

PHILIPPINES

Larger Army

The Philippine Government has ordered an increase of 10 combat teams in the Army—12,000 men—to combat Communist-led Hukbalahap guerrillas. The previous Army strength of 15 combat teams was considered inadequate to cope with the situation.—News release.

GREAT BRITAIN

Universal Freighter

Notable as the largest military aircraft yet produced for the Royal Air Force, and as the second-largest British land-plane, the *Universal* has been undergoing flight tests after several years of design development. Intended primarily as a military freighter and troop carrier, the *Universal* also offers considerable promise



The RAF's new freighter and troop carrier.

as a commercial freighter. Simplicity of design has been achieved, and facilities provided for easy loading of freight through "clam-shell" doors in the rear fuselage.

The span of the *Universal Freighter* is 162 feet; the length is 98 feet 4 inches; and the height is 31 feet. It is powered by four Hercules engines.—*The Aeroplane*, Great Britain.

Tank Production Increase

The War Minister has announced that British tank production will be "more than doubled" as quickly as possible. This will include the output of the new 50-ton *Centurion*, claimed by the British to be the superior of any known Soviet tank.—*The Kansas City Star*.

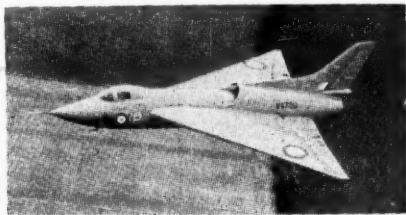
Radio Interference

Britain has asked Russia to stop radio interference which is blotting out home programs in parts of southeast England.

This interference is apart from the radio war in which Russia is trying to jam broadcasts from the United States and Britain directed at Russian listeners.—*The Christian Science Monitor*.

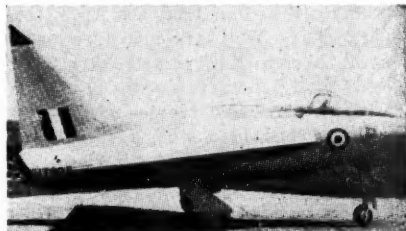
Flying Triangles

Great Britain is presently testing two new delta wing aircraft, the *Avro 707* and the Boulton Paul *P.111*. It is believed that this wing configuration will permit con-



trolled flight at and beyond the speed of sound and may well anticipate the shape of aircraft of the future

The *Avro 707*, above, will be used to investigate the delta wing at speeds up to the transonic region, while the *P.111*,



above, is intended for high-speed aerodynamic research.

The span of the *Avro 707* is 33 feet; the length is 34 feet 4 inches; and the height is 12 feet 6 inches. It is powered with a Rolls-Royce Derwent gas-turbine.

The span of the *P.111* is 33 feet 6 inches; the length is 26 feet 1 inch; and the height is 12 feet 6½ inches. It is powered by a Rolls-Royce Nene jet engine.—*The Aeroplane*, Great Britain.

BRAZIL

Stock-Piling

Brazil is intent on building stock piles of materials considered essential to prevent industry from shutting down in case of a general world war. Among these materials are petroleum products, iron and steel, coal, and cellulose for paper manufacturing.—*The New York Times*.

Economic Progress

The Director of the Brazilian Government Trade Bureau stated recently that Brazil has passed the new-country stage of economic development and now needs systematic methods of building up basic mass-production industries. Brazil, he said, needs the capital and technical assistance that the United States possesses, "to reproduce the American miracle as we go along."—*The New York Times*.

US Generals Honored

The Brazilian Government has honored three American generals with honorary titles in the Brazilian Army and Air Force. General Mark W. Clark and Lieutenant General Lucian K. Truscott have been named as "Honorary Generals of the Brazilian Army" and Lieutenant General Ira Eaker has been named "Honorary Brigadier of the Brazilian Air Force."—*Diário Oficial*, Brazil.

PAKISTAN

Army Training

A scheme for introducing military training and military science as a compulsory subject in the colleges and schools in Sind is receiving final touches by the Sind Educational Minister.

Military training is already compulsory in the colleges of Karachi and optional in schools.

Karachi is the capital of Pakistan and of the State of Sind.—*The New York Times*.

ITALY

Naval Construction

The Italian Navy has ordered work to begin on nine new warships—two heavy destroyers, three escort destroyers, one submarine chaser, and three fast motor launches.

The vessels will be laid down as part of Italy's 5-year naval building program, within limits authorized by the World War II peace treaty.—*The Christian Science Monitor*.

Military Conversations

Bilateral conversations between the Italian and United States Governments have begun in Rome to examine the nature and extent of Italian rearmament and what the United States can do to help.

The conversations have as their objectives the formulation of an organic plan not only for rapid and efficient Italian rearmament, but also for the continuation of social reforms and expansion of production that the Italian Government regards as the two basic elements of its policy.—*The New York Times*.

Army Budget

Italy's Supreme Defense Council has asked for an additional 200 billion lire (820 million dollars) for the Nation's Army. This is almost three times the amount previously considered by Parliament for the Army.

This request was made after it was found that the Army's share of a 150 billion lire defense fund (69 billion lire) was insufficient to meet the needs of land forces.—News release.

SOUTH AFRICA

Jet Fighters

The South African Air Force has purchased 10 *Vampire* jet fighters from Great Britain. The planes will be delivered in March 1951.—*The Christian Science Monitor*.

SWEDEN

Guided Missiles

According to a recent announcement, progress on Swedish guided missiles has advanced to a stage where tests will be transferred from research stations to field conditions.—*The New York Times*.

RUMANIA

Russian Garrisons

Russian anti-aircraft artillery forces are providing military protection for the shipyards and port installations of the lower Danube. In addition, large Russian garrisons, including engineer and paratroop forces, are maintained along many sections of the Danube.—*Allgemeine Schweizerische Militärzeitschrift*, Switzerland.

Foreign Military Briefs

Great Britain is equipping its fighter squadrons in the Far East Air Force with *Vampire* jet fighters.

Small refrigerator units for cooling the cabins of jet fighters have been ordered by the Royal Air Force.

Britain will soon start recruiting women to fill jobs in armaments factories as part of the country's defense program.

The task of organizing defense in depth of French territory and of forming the new territorial guard has been turned over to General Rene Chouteau, Military Governor of Paris.

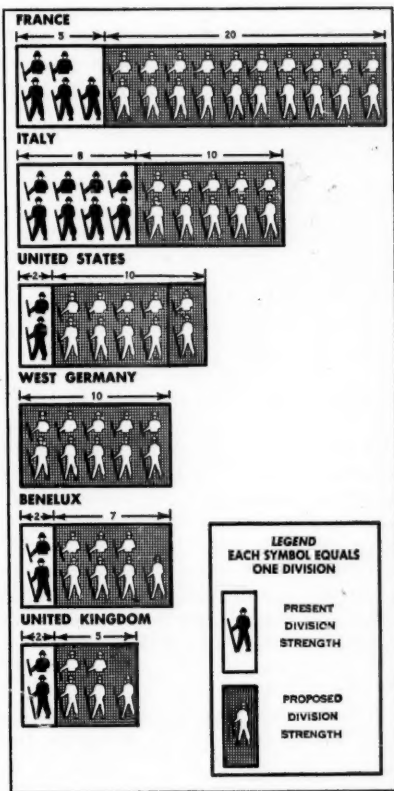
The Hungarian Finance Minister has asked Parliament for 29½ billion forint (2½ billion dollars) for the Army budget for 1951.

The Soviet Army has about 5,000 transport planes, capable of dropping some six divisions and their equipment behind enemy lines.

WESTERN EUROPE

Plan for Atlantic Pact Armies

Atlantic Pact defense planners hope to complete the build-up of their armed forces



by 1953. The figures above refer only to divisions actually stationed in Europe; both France and Britain have additional divisions in Southeast Asia and elsewhere. Russia and her satellites are estimated, at present, to have more than 200 divisions.—*The New York Times*.

EASTERN GERMANY

Maintenance Problems

Reports from Eastern Germany indicate that the Soviet Army of occupation is suffering from poor maintenance of equipment and a lack of mechanical training. These deficiencies are believed to be due to the industrial expansion program of the present 5-year plan which has siphoned off large numbers of skilled technicians from the Army and which has replaced them with untrained personnel.—*The New York Times*.

Salvage Operations

Belgian shipyards are currently doing a thriving business of repairing salvaged German merchant marine vessels—at the direction of the Soviet Union.

Vessels which have been salvaged include the 22,000-ton German liner *Hamburg*; her sister ship, the *Hansa*; the 14,000-ton *Der Deutsche*; and the 12,000-ton *Cordillera*.

Under present plans, the Soviet zone of Germany will have 22 vessels in its merchant marine fleet by 1955, and will be in a position to resume trade with all parts of the world.

Crews to man these projected ships are gradually being assembled and trained along the Baltic coast under Soviet auspices.—*The New York Times*.

Russian Stressed

The Russian language has become the most important subject for school children of East Berlin.

The Education Department of the Communist East Sector Administration has ordered an investigation to be made of every case of failure in Russian, which is a compulsory subject.

If it is confirmed that a student failed "because of open or concealed resistance against the Russian language," he or she cannot be promoted.—*The Christian Science Monitor*.

USSR

New Tank

A new Russian tank, the *AM11*, will go into production soon, according to a report in *Schwabische Landeszeitung*, an Augsburg, Germany, newspaper.

The newspaper said the new *AM11* will include the latest experiences of European and American tank production.—*The Christian Science Monitor*.

Military Strength

A British Armed Forces yearbook has listed the following information on the Soviet Union:

1. Trained military manpower in the Soviet Union will be stabilized at about 12 to 13 million men by 1954.

2. The Soviet Army probably has 3 million men now under arms and has been conscripting 1,200,000 men a year since the end of the War.

3. Since 1945, the Soviet Army has been thoroughly reorganized and trained, with tanks and artillery as its most important branches.

4. The Soviet Air Force has a first-line strength of 18,000 military aircraft.—*The New York Times*.

Production and Strategy

The editor of the *Intelligence Digest*, London, stated recently that Russia was producing at least four atom bombs a month. He predicted, also, that:

1. By 1952, Russia might regard its atomic bomb stock pile as adequate for war.

2. Soviet strategy called for a swift attack on the Middle East, timed to coincide with a Chinese Communist invasion of all Southeast Asia.

3. Soviet atomic attacks would be aimed, primarily, at the sea ports of the Western Powers, with "pilotless missiles and long-range rocket-launching submarines" delivering the blows.—News release.



Rommel *versus* Montgomery

Translated and digested by the **MILITARY REVIEW** from an article by Major General Kazimierz Głabisz in "Bellona" (Polish language military quarterly published in England) April-June 1950.

Any

ONE of the interesting by-products of almost every war is the creation of legends and myths, not only about events, but also about the participants. The last War broke all records in this respect, due to excellent propaganda and reporting techniques. From out of the galaxy of outstanding leaders on both sides—aside from General Dwight D. Eisenhower—Field Marshal Bernard L. Montgomery and Field Marshal Erwin Rommel became the most legendary.

It is worth while to attempt to understand and compare these two figures and their ways of command. In attempting to present an accurate account of both these famous commanders and their operations, one cannot confine himself solely to an analysis of their battles. It is necessary, although superficially, to examine their military preparations, personalities, and attainments in the nonobjective periods of their "duel."

Military Backgrounds

Although Montgomery was 4 years older, and became an officer 2 years earlier, both climbed the military "ladder" in almost the same length of time. Advancement for both was slow during their early

careers. Rommel, due to *Reichswehr* restrictions, was obliged to wait a long time for promotion to the ranks of major and lieutenant colonel. To illustrate, while Montgomery became a lieutenant colonel in 1930, Rommel did not become a major until 1933, and he had to wait until 1935 to achieve the rank of lieutenant colonel. They became generals at about the same time: Montgomery at the end of 1938 and Rommel a week before the invasion of Poland (1939). The interval in their advancement to corps commanders was reduced to 6 months. In their advancement to marshal, Rommel preceded Montgomery by 2 years; receiving the marshal's staff in 1942.

From the standpoint of practical infantry operations in the line, Rommel, unquestionably, had the advantage. Rommel remained in the line, without interruption, from 1912 to 1935, while Montgomery, during that time, spent a good many years in hospitals, on staffs, and either as a lecturer or student in schools. This does not mean that Montgomery did not climb the "ladder" to the position of a line commander. He commanded at all stages; but he commanded for shorter periods.

Rommel had a greater advantage from the standpoint of combat experience. He spent the whole of World War I at the front (French, Rumanian, and Italian) as a company commander, distinguishing himself through his bravery. Montgomery saw action for only a few weeks in 1914—being wounded early in the War and spending most of the time in hospitals near the front. Likewise, during World War II, Rommel acquired considerably more combat experience before he “crossed swords” with Montgomery. In 1940, Rommel commanded an armored division in combat; and from February 1941 to August 1942 he commanded a corps in Africa.

Montgomery had experienced only a short tour as a division commander in France during 1940 before going to Africa. However, from the standpoint of staff and scientific preparation, Montgomery undeniably surpassed Rommel. Montgomery had attended higher military schools, had more staff experience, and had commanded larger army organizations during peacetime.

Military Achievements

Despite general opinion, Montgomery and Rommel measured their forces and capabilities against one another over a relatively short period of time. In Africa, they opposed each other for only 7 months (from 13 August 1942 to 8 March 1943). This period was too short to compare adequately the two leaders, particularly Rommel. In order to understand Rommel, it is necessary to go back further in his career, not to World War I nor to the September campaign, but rather to examine his operations in France in 1940 and in Africa before the arrival of Montgomery.

In France, as the commander of the 7th Armored Division, he displayed determination and bravery. On 14 May, he was slightly wounded and almost made a prisoner of war. His division, which he had been commanding for only 3 months, forced its way far ahead of the adjoining

5th Armored Division and achieved great success at Clairfay, Ovesnes, Landrecies, Le Cateau, St. Eloi, and St. Valery. In the second phase of the campaign, Rommel took Cherbourg which was weakly defended by 30,000 French troops. In this engagement, Rommel's division took many thousand prisoners, 458 tanks and armored vehicles, and 340 guns. In the same engagement, he lost only 42 tanks and 2,500 men. These successes, as well as special considerations on the part of Hitler, constituted the beginning of Rommel's fantastic career.

Operations in Africa

When Rommel arrived in Africa, on 6 February 1941, with the first contingents of the *Deutsches Afrika-Korps*, he was given the mission of covering and defending Tripoli. With this in mind, he had to assemble his corps, which was attached to the Italian Army. When the Italian forces were routed by Wavell, Rommel's mission was changed. Despite the fact that he was short one armored division, and had not yet established his lines of communication, he sent out detachments immediately in the direction of Agedabia and, on 31 March, conducted a deep reconnaissance which developed into true offensive action.

He operated audaciously and violently, as he had in France. In spite of the warning of the Italians, he pushed the main body of his forces over the trackless terrain to Mechili and Derna, cutting off considerable British forces in the Bengasi province. In a single move, he reached the Egyptian frontier, although Tobruk had not been taken and his lines of communication were drawn out hundreds of miles. At Halfaya and Sidi Omar, he repelled British attacks, consolidated his positions, established a gasoline supply base, and began plans for the conquest of Tobruk. There he experienced his first defeat.

In mid-November, he was attacked on the east by Cunningham, who at that time

was commander of the British Eighth Army. In spite of the British numerical superiority in tanks and aircraft, Rommel held off the British counteroffensive until 6 December 1941, by thrusts of the 15th and 21st Armored Divisions against the British rear. Finally, however, he withdrew, leaving behind, in the border



**Field Marshal Erwin Eugen
Johannes Rommel.**

fortifications, tank detachments which defended themselves until mid-January. Pressed rather lightly by the British, he held a position back of Marsa El Brega on 11 January 1942.

Use of Initiative

Although Rommel lost more men and matériel here (about 60,000 men and 386 tanks) than he did later in the battle at El Alamein, he went over, 8 days later, to the counteroffensive—without the knowledge or approval of the German or Italian high commands. He achieved complete surprise and threw back the British forces to the line Gazala—Bir Hachem.

All credit must be given to the part played by Rommel's workshop-repair service. This organization helped to provide a flow of tanks to Rommel's forces when delivery from Germany slowed down. Tanks at his disposal increased from 200 to 560 during the period March to the middle of May—332 of them being of



**Field Marshal Sir Bernard
Law Montgomery.**

German origin. Thus strengthened, he attacked, on 26 May, the new British-French line, jumping ahead of Ritchie's contemplated attack. He met with stubborn resistance, and it was only after hard fighting that the balance of victory was tipped in his favor. He conducted the pursuit with exceptional energy and audacity. On 17 June, he took Tobruk which, at that time, was weakly defended by South African forces. In spite of the complete exhaustion of his forces, and possessing only 50 tanks, he reached the El Alamein "narrows" by 4 July. During this action, he captured 45,000 prisoners, 1,000 armored vehicles, and 400 guns.

Pinnacle of Success

This was the zenith, the culminating point of his successes. Although he had arrived inexperienced in desert fighting, he learned its secrets and peculiarities and skillfully exploited them.

It seemed as though no one could check the German avalanche, and that the gate of the Near East was wide open to it.

The Allied forces quickly closed the gate leading to the delta of the Nile and changed over to the counteroffensive. They received four new divisions (the 8th and 10th Armored Divisions and the 44th and 51st Infantry Divisions) plus artillery, antitank, and armored matériel. At the same time, the Allied air forces in the area were increased and the British shifted their high command. Alexander replaced Auchinleck as commander in chief of the British forces in the Middle East and Montgomery succeeded Ritchie as the Eighth Army Commander. The British were bringing in an ever increasing flow of supplies, while German-Italian transportation could provide only a trickle. Although Malta was paralyzed and threatened, deliveries from Italy were cut 50 percent. It was during this period that Montgomery assumed command of the British Eighth Army (13 August). He attempted to establish order, heighten morale, and further training. Rommel, however, did not give him much time to complete his plans.

On 30 August, Rommel launched a new attack. He struck on the south as Montgomery had anticipated, although the British had the advantage not only in the air but also on the ground. After initial successes, Rommel's forces arrived at a point about 18 miles southeast of El Alamein, but they could not continue toward Alexandria without taking the El Halfa range.

Rommel's attempts to take this key range failed, due to the stubborn resistance of the defenders, supply difficulties,

and bombing attacks by the Royal Air Force.

On 3 September, the Germans drew back to their former positions. Montgomery ordered that they be contained, but not pursued. Montgomery did not believe that his forces were trained sufficiently to permit offensive action, so he did not attempt a counteroffensive at this time. Also, he was afraid of a trap and did not have a sufficient reserve of supplies on hand to take such a gamble. He knew that his chance would come, and that time was playing in his favor.

At this time, he sent a dispatch to Churchill, stating: "If the attack occurs in September, it will not succeed. If we wait until October, I guarantee great success and the destruction of Rommel's Army. Am I to attack in September?"

Preparing the Attack

Montgomery wasted no time in getting everything ready for the planned attack. Alexander gave him a free hand and, in addition, fully satisfied his matériel requirements. Thus, by 15 October, Montgomery had 3 armored divisions, 3 armored brigades, and 7 infantry divisions, as well as 2,100 guns and 1,114 tanks. Rommel had 530 tanks, 5 German armored divisions, and 7½ Italian infantry divisions. Rommel, seemingly, did not estimate correctly the strength of the enemy for, on 24 September, he went to Germany to see Hitler, check on supplies, and receive medical treatment. (He suffered from a liver ailment.) Rommel's apparent unconcern about the enemy situation was indicated by the fact that he left General von Stumme in command of the German forces without giving him any plan of action in case of a British attack. He also consented, at the same time, to a leave of absence for his chief of staff, Bayerlein.

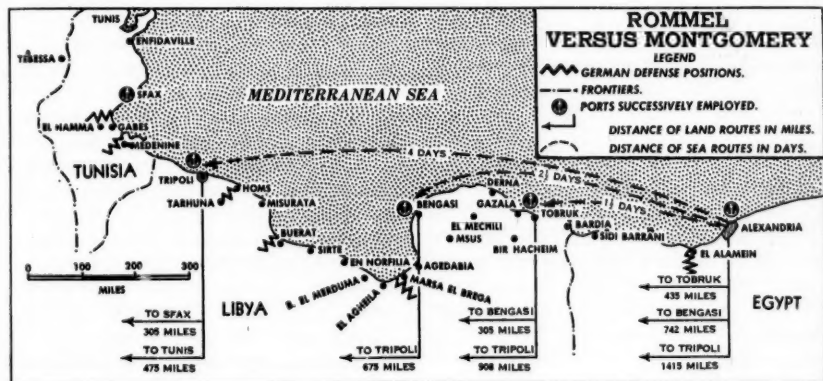
On 24 October, Rommel received word of a powerful British attack. Although he

had been offered the command of a group of armies in Russia, Rommel asked Hitler if he could return to Africa. Rommel returned to Africa where he assumed command on 26 October. However, he soon discovered that he had only 358 tanks available for action and that all of his reserves had been committed.

The British forces had more than 800 tanks, as well as air superiority. The fate of the battle of El Alamein was already decided, although it continued un-

weakness of his opponent, for he did not attempt a rapid pursuit of the German forces.

Rommel, who counted on an immediate British attack, wished to draw back, without delay, all foot units to the Buerat line and to hold only mechanized units at the advanced positions. This plan met with stiff opposition from the Italian and German high commands. Rommel, therefore, flew to East Prussia and Rome, in order to obtain additional reinforcements



til 4 November, when Hitler consented to Rommel's breaking off the hopeless and bloody battle. Hitler's delay sealed the fate of the Italian divisions which, for the greater part, had been taken prisoner.

In spite of heavy losses and the growing British superiority, Rommel carried out his retreat in a masterly fashion. Rommel returned to the line back of Marsa El Brega, from which he had set out for the conquest of Egypt. This time, however, he did not have the capacity for counteroffensive action. Bastico, the Italian commander, had organized a weak defense of this line with inexperienced divisions. Rommel had available only 38 usable German tanks, 20 armored vehicles, 30 guns, and 70 antitank guns. Montgomery apparently did not realize the

and an approval for a retreat as far as Gabes in Tunisia.

Hitler, at first, was furious, pretending to regard him as a coward and a defeatist. Afterward, however, he agreed to a withdrawal of the foot units and promised enormous deliveries. He would not permit, however, a withdrawal to Tunisia.

Loss of Maneuver

Montgomery attacked, 13 December, and enveloped Rommel's right wing. Rommel fell back as soon as he noted the enveloping movement, but his situation became hopeless. The British and Americans had made a landing in Algeria, in his distant rear area, and he lacked gasoline. Due to the gasoline shortage, armored divisions were stranded at Mugar and eventually

were overtaken by the British forces. A few vehicles escaped—thanks to the timely slipping through of a small gasoline convoy—but they lost freedom of maneuver and striking force. Montgomery had supply difficulties, for his communications lines stretched all the way from El Alamein, nearly 1,000 miles. Because Montgomery knew that the Germans could not escape, he did not hasten the tempo of his pursuit. He did not attack the Buerat line, which was weaker than the El Agheila line, until 15 January 1943, after he had accumulated sufficient ammunition for 10 days of firing by four large units, and had organized the occupied airfields in the region of Merduma, en Nofilia, and Sirte.

Holding Action

When Rommel became aware of the enveloping movement, he drew back immediately in order to take up a position at a natural terrain obstacle in the Homes Tarkuns region. Although he had only 39 tanks in operation, he had to hold this position "for 3 weeks at any cost" in order to assist in the evacuation of Tripoli. Rommel abandoned Tripoli on 23 January and, almost without battle, reached the Mareth Line in Tunisia.

On the Mareth Line, Rommel held at last. Although he was resupplied, he was unable to save the situation. The injection of additional men and matériel only served to prolong his resistance. Rommel, therefore, became disgusted and asked for release; motivating his request with the insertion that: "I do not feel well and have no inclination for the task." At the same time he asked Hitler's consent for the evacuation of the *Deutsches Afrika-Korps*.

Change of Command

On 23 February, General Messe, who had led the Italian forces in Russia, succeeded Rommel, who was given command of the group of armies.

Rommel soon recovered his former buoyancy. He did not wait for the approach of the British Eighth Army from the east and the cutting of his communications by the Americans approaching from the west.

Leaving the main body of the *Deutsches Afrika-Korps* in the Mareth Line, he selected the 10th and 21st Armored Divisions and rushed, at lightning speed, toward the Americans in the direction of Tébessa. There, he reached the Kasserine Pass, but was prevented from exploiting his success because of the intervention of the Italian Supreme Command. Thereupon, Rommel withdrew from the pocket which had been produced in order to harass the advance guard of the British Eighth Army which was cautiously approaching the Mareth Line. He formed a new maneuvering group, under the command of Cramer, composed of remnants of the German 10th, 15th, and 21st Armored Divisions, and gave it the task of attacking Medenine, where three British divisions were stationed. This attack ended in defeat at Metamaur.

There was no surprise this time. On the contrary, the Germans lost 52 of their 140 tanks to the powerful and well-camouflaged British antitank defense forces.

After this defeat, and before the attack on the Mareth Line, Rommel flew (8 March) to Rome and East Prussia, never to return to Africa. Whether he had abandoned his forces for reasons of health, or whether Hitler held him back for future action is not known.

Montgomery, at that time, was methodically preparing for an attack on the powerful Mareth Line, an attack which was launched on 20 March.

Further operations of Montgomery in Tunisia, Sicily, and Southern Italy are not related to this article. Likewise, the battles in France after the Normandy invasion add nothing new to the Rommel-Montgomery "duel" so they will not be discussed here.

Conclusions

1. The battle itself, and the result of the operations of Rommel and Montgomery, which have been compared, do not answer the question, "Which of them was the greater leader?" Their African "duel" was a victory for Montgomery, even though Rommel was not surprised by the attack at El Alamein, and even though Montgomery conducted his operations less prudently. Rommel would have been able to maintain the initiative only by occupying Alexandria and by extending his communications lines to Greece. Without Alexandria, and in the face of the Anglo-American landings in Algeria, he had no alternative but defeat. This defeat would have occurred earlier if Montgomery had pursued him more energetically.

2. The caliber of the two leaders was not equal. Montgomery was a strategist and a planner, and above all, a brilliant organizer and technician. Rommel, on the other hand, was a remarkable tactician, an outstanding animator, and an audacious operator. He was not prepared for his promotion to the rank of commander of the group of armies. He, too often, promoted outright fantastic projects. Von Rundstedt gave the following opinion of Rommel: "I do not believe that he would be suited for higher command, but he was truly a courageous and capable commander."

3. During his preparations for battle, Montgomery definitely surpassed Rommel in knowledge, thoroughness, and versatility. During the battle, he did not equal him in fighting spirit, sense of terrain, or even tactical preparation. However, he surpassed him in judgment and methodicalness in shaping and executing decisions.

4. Rommel, it is true, was a blind "Draufganger" (go-getter), disregarding

the importance of supply and air power. It is equally true that, above all, he believed in surprise, speed, boldness, and skill. He was a ruthless follower of the maxim, "The offense is the best defense," and believed that "Soldiers are not counted, but weighed." The fact that the majority of the formations under his command did not belong to the "heavy weight" category rendered his operations much more difficult, and led to the excessive use of his armored units. In spite of this, the tempo of Rommel's offensives, movements, pursuits, and retreats in Africa was so great that he surprised the Allied forces and his superiors. He needed a bit, rather than spurs—especially since his logistic support almost always hung on a thread.

On the other hand, Montgomery's superiors never were obliged to use the bit, but they often used their spurs—but to no avail. Supply problems, the tendency toward the exclusion of risk, and the saving of troops (by the massed employment of matériel as well as precise preparation of movements and camouflage) influenced his plans and actions.

5. Both commanders were hampered in the execution of their operations by the narrowness of the coastal zone, lack of cover, scarcity of ports, and low efficiency of land communications.

6. Montgomery's masterpiece was the preparation and waging of the battle of El Alamein, while Rommel's masterpieces were his first three offensives and his final retreat.

Summarizing, it may be stated that although the caliber, style, and temperament of the two commanders were different, and to a certain degree even in opposition to each other, both were great soldiers and commanders. They proved repeatedly that, under suitable conditions, it is possible to win by different methods.

The Czechoslovakian Armed Forces

Translated and digested by the **MILITARY REVIEW** from an article in
"Allgemeine Schweizerische Militärzeitschrift" (Switzerland) March 1950.

IN SEPTEMBER 1938, the Czech Army was spared the test of its strength, and a sigh of relief was breathed in all the higher officers' circles of Prague. To be sure, the Army was backed by an excellent armament industry, and had very good equipment at its disposal, but there was a great lack of unity regarding the general strategic conception of national defense. Obviously, the extensive Czech frontier had to be defended, and this would have meant thin disposition of available forces. Also, the famed border-defense installations were nothing more than concrete coffins. Not even the most primitive facilities for human occupation had been provided.

From October 1938 on, the Germans took steps, through secret buyers, to procure large quantities of armament matériel from Czech factories. As a result, by March 1939, the Czech Army had received little, if any, of the military equipment manufactured in the Nation's munitions plants. At that time, Germany took over the country completely. The delivery of 210-mm guns, which were then being built for Turkey, was held up and the guns taken over for German use.

Extensive quantities of all types of Czech matériel came into the hands of the Germans, including the bombs later dropped on Warsaw in September 1939. In the days which followed, many German divisions were completely armed with Czech matériel. German security forces, which were still in Norway during the last days of the War, had Czech weapons and the Norwegian Home Guard was still using them in 1949.

German armament orders were transferred to Czechoslovakia after Germany took over the country. Kolben-Danek, in

Prague, manufactured an efficient light tank—Model 38—whose chassis was also used in the construction of self-propelled mounts. The Poldi Works manufactured tank parts; Skoda manufactured guns ranging in size up to 300-mm; the Brüner Arms Factory manufactured automatic weapons ranging in size up to 20-mm; and the Tatra Works manufactured trucks. Airplane factories were also taken over and further developed by transferees from German firms. Among them were the two Messerschmidt Works in Schlickenau and Kolin as well as the designing offices in Prague. In addition, gasoline refining works and many other important types of industry were transferred to Bohemia and Moravia. Thus, the Austrian Minister of the Interior is quite correct when he states that Czechoslovakia was of considerable importance in Germany's armament effort.

Re-emergence of Czech Armed Forces

The Czech Army itself was entirely dissolved in March 1939 and only a protectorate force of 7,000 men was allowed to exist.

Early in the War, the Germans had no difficulty with Czech internal security. It was not until 1942 that sabotage forces began to assume importance. Later, especially in the mountainous sections of the country, small partisan forces began to appear. England organized and equipped a Czech force made up of volunteers from Western Europe. After the Normandy invasion, this force, a motorized division, took part in the fighting around the Dunkirk pocket. A special insignia—a conventionalized lion—on the uniform showed that this force was in the field for the exiled Czech Government.

Czech formations were also organized on the Russian side. These grew to corps strength and, although infantry, were strongly armed with artillery. They came in contact with the Germans several times on the Eastern front, and one of their victories is now celebrated in Czechoslovakia as a memorial day.

The efficiency of the Czech laborers, generally speaking, was very good. When the Germans imprisoned or deported any of them, it was due, as a rule, to informers in their own ranks.

The protectorate forces authorized by the Germans were transferred to Italy, during the last phase of the War, where they were assigned police duties in the communications zone.

Postwar Organization

After a few attempts by militia-like formations and partisans to demonstrate their military strength, a start was made, in June 1945, toward the organization of a new Czech Army. The rift which was spreading throughout the world was quickly noticeable in the Officers Corps. The group of officers, maintained by the Western Powers, looked toward England for its salvation. After the arrival of the forces which had been equipped in England, it looked as though the Czech armaments might come from England. The other group of officers who leaned toward Russia was bent on organizing the new Army on the same pattern as the Soviet Army. Differences of opinion and internal difficulties made the formation of a homogeneous Officers Corps almost impossible. Military observers in Czechoslovakia assure us that it will be quite some time before the standardization of armament and matériel is achieved. For example, it was planned to equip the entire Army with the steel helmet used up to 1939, but many infantry formations still wear the German helmet. German uniforms still predominate. At a military exhibition in the Prague stadium, German weapons and

armament, such as the Model 1934 machine guns, *Panzerfauste*, and armored troop carriers, made up the bulk of the matériel on display.

There is great diversity in the source of the equipment. Only a few light weapons came from the former protectorate force. The formation which was organized by England brought its equipment with it, as did the forces which fought on the Russian side. After the departure of the Germans, the Czechs were given captured German weapons by the Russians. Prague, therefore, made efforts to obtain weapons from England, as well as from Russia. Only a small quantity of arms was received from England, however, and, for political reasons, none were received after 1948. However, machine guns, cannons ranging in size to 150-mm, tanks, and fighter and transport aircraft were received from Russia.

Not until 1946 was the Czech armament industry sufficiently restored to be able to begin production. However, the fact that the Germans had used the Czech armament industry for a large number of finishing operations connected with their own highly developed industry helped to accelerate its restoration. Thus, Kolben-Danek is able, today, to construct the very efficient *Hetzer* antitank gun, which is also exported. In addition, the Brünner Armament Works constructs the former German assault rifle.

The Czech Air Force is still using German airplanes, including the double-jet *Me-262*, and manufactures an improved *Me-109f* type plane for export. The well-known *Fieseler-Storch* training plane is flown by the Czech Air Force. It can be seen, from pictures that have been published, that English planes of the *Spitfire*, *Mosquito*, and also the *Meteor* jet-propelled types are also in use. In addition, fighter planes of the *La-7* and *Yak* types, fighter-bombers of the *Pe-2* type, and *IL-12* type transport planes have been delivered from Russia. The

latter are used on the regular commercial air lines. The Czech state-controlled air industry constructs small planes, mainly, and is dependent on the production of the Dimitroc Works (helicopters), Kolben-Danek, and Aero Works, as well as on the factories in Chocen and Zlin.

The new Czech Army is based on manpower serving a 2-year period. It consists of 10 divisions, including 4 motorized, as well as 1 armored corps of 3 brigades. The Air Force is a part of the Army and possesses air-landing for-

mations. The peacetime strength of the Army is about 150,000. Efforts are being made to incorporate large numbers of untrained men into its organization. Even though the Czech Army is still far from its planned goal, as regards its development, its activity is, nevertheless, noteworthy, due to the country's strategic importance in Central Europe. The reconstructed Czech armament industry again is making deliveries to South America and Asia. The arsenal in the heart of Europe again is producing the deadly weapons of war.

1-17 The Land Aspect of a Future War

Digested by the MILITARY REVIEW from an article by Lieutenant General Sir Giffard Martel in the "Journal of the Royal United Service Institution" (Great Britain) May 1950.

GREAT Britain's Army always suffers a serious setback after a great war. All the rapid progress made during the war in modernizing it comes to a sudden end. What happened after the recent War? In a very short time, it became clear that the only possible threat to world peace came from Russia. Their army had hardly made any progress in mechanization. There were no machine-gun carriers, or wireless trucks, or platoon trucks, and the army was almost entirely dependent on horse transport except on the lines of communication. There were, however, a great number of Russian divisions, and they contained efficient fighting men.

No one thought that it was at all likely that Russia would start a shooting war, but there was the possible threat of an advance against us in Europe or toward the Middle East with some 300 divisions. How did we set about to meet this threat? Position warfare was to be used to hold a line on the Elbe or the Rhine. As the Western nations did not have sufficient strength to hold a similar line on the French frontier at the beginning of World War II, conscription was to be used to

produce the manpower for a much larger army. Even then, it was unlikely that the Western nations would be able to raise more than about one-third of the numerical strength of the Russian forces. No one felt much confidence in being able to hold up the Russian forces if they should attack under such conditions.

What is the position today? During the War, the gigantic flow of American trucks to Russia barely enabled them to keep their long and difficult communications going. Practically none of these trucks could be used to assist the fighting forces. The communications are equally long and difficult today. The flow of trucks from America ceased after the War. The manufacturing capacity in Russia or in Russian hands is very small. Hence, their army still remains largely unmechanized. Naturally Russia has tried to conceal this fact. She has made every effort to make the world think that her forces are highly efficient and modernized. She maintains, in being, a force about the size of an armored division, which has the most modern equipment and is highly efficient. It travels about like a circus and

appears at Moscow or in the Balkans. All foreign representatives are invited to see this display. It is most impressive, but it is merely a shop front window without much behind it. Then it must be remembered that the military intelligence staff of Western Europe has had great difficulty in obtaining information from behind the Iron Curtain. They are, naturally, asked for such information as the organization and establishment of a normal Russian division. They become concerned when they cannot answer such questions.

The Russians have made full use of this position. They have printed bogus statements of Russian establishments and arranged for these statements to fall into the hands of the Western forces. In this, and in many other ways, they have built up a fear in the minds of the Western forces that the Russian forces, in addition to their great numerical strength, are modern, mechanized, and highly efficient. Much the same propaganda has been spread by Russia about her air forces. These forces are powerful, but their strength and efficiency have been equally exaggerated.

New Policy Required

What policy should we adopt for the Western European forces under these conditions? The problem is very similar to that which had to be solved by Hitler when he faced the Russian masses at the beginning of the War. He decided to use highly trained forces, making full use of mobility and armor instead of an army, strong in manpower. The Russians themselves explained to me what happened when the clash came. A Russian general described it as follows:

On my left, one of our corps was detrainning. Part of the corps had arrived by route march. The whole place was packed with horse transport. The corps had, of course, pushed out troops to hold an outpost line. Suddenly two German panzer divisions arrived at full speed. They went straight through the outpost line. Our guns hit some tanks, but most of

them got through and attacked our troops and transport before they could deploy. The destruction was frightful. Still more frightful was the fact that they moved 30 miles to a flank that night and did the same to another army corps the next day. There was only one thing we could do, and that was to turn around and march back to the heart of Russia.

If the Germans had kept to this policy they would have won the War, but Hitler forced them to pursue deep into Russia. After a time, they were unable to maintain their mobile and armored forces due to the length of the communications in an enemy country. Without this mobility, they became a manpower army and were defeated by the Russian masses.

Despite these clear and emphatic lessons, today we have returned again to the principle of manpower forces and position warfare instead of concentrating on the mobility of our Army. In facing up to a possible threat from the Russian masses, the only line for the Western European forces to take is to use more and more mobility. Obviously, it is futile to continue to try and take them on at their own game with manpower armies. There need be no fear that our mobile forces would be held up by the *Stalin* tanks. These tanks are designed as a position warfare machine and would not have anything like the mobility needed for that purpose. I have driven a *Stalin* tank but without the present turret.

Formations and Equipment

What does this mean in the way of formations and equipment? It is my belief, after many discussions with the Russians on kindred subjects, that if the Western European forces, including Great Britain and the American contingent, had altogether a total of 20 highly trained, full-strength divisions making full use of mobility and armor, Russian forces would never dare to advance against us. Of course, a striking force of this nature would need the full support of a first-class tactical air force. In addition, they would need the follow-up of some Euro-

pean territorial forces in support, which would be used mainly as police forces. However, the vital factor would be the highly mobile striking force. The great successes which the Germans gained, against both the French and the Russians, in the early part of the War could not possibly have been achieved if their armored divisions had been equipped with the heavy tanks which are part of the present equipment of the armored divisions of the Western nations. This drift to such a heavy and comparatively immobile tank was due to the position warfare complex which seized us at the end of the War.

Taking the existing organization of British armored divisions, I would like to see the armored brigade possess a considerably larger number of tanks. These tanks should not exceed 20 tons in weight and should have a low silhouette. The armor should be 2 inches in front and scaled down on the sides. In this way, all the bridging, maintenance, and supply duties would be greatly eased and a high degree of mobility would be obtained.

There would, of course, be no need to attack strong positions with these mobile forces. The Germans showed us that a great campaign can be won without attacking such positions, provided the mobile forces that are used are sufficiently far ahead in skill, training, and equipment, as compared to the enemy forces. Strong positions would be by-passed and enemy heavy tanks could be avoided easily by using mobility. With these points in view, a dual purpose 75-mm gun, such as that used on the *Cromwell* tank, would be a suitable armament for the tank.

A small number of heavy tanks should be kept, in case we had to engage in siege warfare at any time, but the whole pressure should be on armored divisions for the mobile work.

The provision of armor protection and

tracked transport for the supporting arms in the armored divisions would have to be considered carefully. Both these are ideal and would be needed in some degree, but there is always the danger of failing to obtain the equipment by demanding the ideal. Nothing should, of course, be introduced which reduces mobility.

There seems little doubt that Western Europe should put her faith in mobility and build up the necessary forces. In addition to the questions of equipment, a detailed study would be needed of the strategy to be employed. Should the formations of the striking force penetrate deep in the initial advance, passing right through the belt of the enemy forces, and thus aim at the collapse of the enemy government, or should they penetrate less deeply and aim at smashing up the enemy forces? Such questions and the problems of supply by air would have to be examined closely.

Mobility vs Manpower

The day will come when there will be a showdown between Russia and the rest of the world. It is useless to discuss matters with Russia unless the Western nations possess superior strength. We cannot do this with mere numbers. If, however, we develop warfare in this modern form, depending on mobility, we can reach a position where the Russians would be afraid to go to war. That is the time to talk to them and to reach terms for world peace. They still remember the attacks made by the German panzer forces in the early stages of the War. Whether Western Europe could raise these highly trained forces by conscription, or whether regular personnel would have to be used, is too large a matter to discuss in this article. It is well to remember that much smaller numbers are needed when we put our faith in mobility and skill as opposed to manpower.

The Canadian Army Staff College

Digested by the **MILITARY REVIEW** from an article in the "Canadian Army Journal" (Canada) Summer 1950.

JM

EVERY year at Kingston, Ontario, carefully selected officers from the Canadian Army work toward an enviable goal. They are the students who attend the Canadian Army Staff College in Fort Frontenac, a military site older than the city itself.

Here, there is a touch of the old and of the new. In the location where Count

the knowledge of officers for peacetime assignments.

With most senior officers now listed among its graduates, the College is heading toward its original goal—that of qualifying senior captains and junior majors as staff officers.

The theoretical phase of the course is



Every year carefully selected officers attend a 10-month course at the Canadian Army Staff College at Fort Frontenac, above, to qualify for appointments in all branches of the staff.

Frontenac and La Salle planned sorties into the hinterland, young officers from every corps of the Army study for the roles they will play in the Nation's future. Here, too, is an amazing parallel of defense preparedness. The Fort represented the local defensive efforts of the early settlers and explorers, and today it represents a vital key in our defense system.

The object of the 10-month course is to qualify officers for appointments in all branches of the staff in time of war. In addition, the course is designed to broaden

presented as a six-part program, which includes:

1. The study of the organization and employment of divisional units, plus corps and army troops which are available to work with that division.
2. The organization and functions of the Canadian Army and the Department of National Defence in peacetime.
3. Staff techniques.
4. Air forces in support of the Army.
5. Lectures by prominent industrialists, militarists, and statesmen on matters of national and international importance.

6. The organization and methods of the United States Army.

The practical phase is divided into four parts, and includes:

1. Movement, tactical employment, and administration of all types of divisions in all phases of war.

2. The principles and techniques of amphibious operations.

3. All aspects of air support.

4. The preparation and conduct of training.

Instruction consists of lectures, seminars and general discussions, model demonstrations, and indoor and outdoor exercises. In addition to highly qualified lecturers, each corps or service director from Army Headquarters in Ottawa travels to the College to outline the work and recent developments within his particular branch.

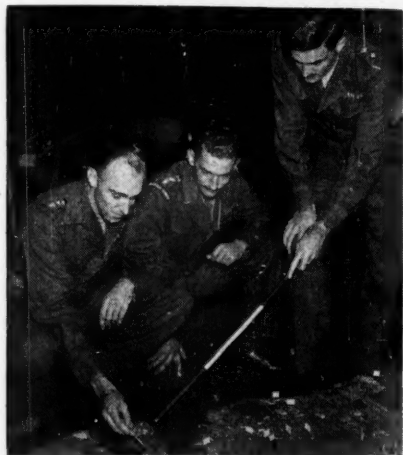
To add impetus, interest, and detail to the various subjects taught at the College, officials have drawn upon a technique employed with great success in colleges of the United Kingdom and the United States. It is the skillful blending of lectures, model demonstrations, and costumed playlets to illustrate particular points of instruction.

An example of this is the annual presentation of "Exercise Valhalla," a drama enacted by costumed instructors to illustrate the principles of war. Using such historically famous militarists as Caesar, Alexander the Great, Ghengis Khan, Napoleon, Rommel, and Montgomery as the exponents of various principles of war, the actors present the lessons of war learned from history.

The approach to organized study is followed through on a seminar basis. In each seminar, the officers represent as many corps and services as possible. Thus, at all times, students have at least one officer experienced in almost any subject under discussion. At the end of each tutorial period, the students are reassigned to new groups and, through this interchange, gain

new viewpoints to familiar as well as new situations.

Two important exercises in the field are conducted in co-operation with the Royal



Above, an instructor assists two students with a problem in amphibious operations. Below, "Rommel" meets "Montgomery" during a play illustrating the principles of war.



Canadian School of Signals. With Signals personnel and members of the Canadian Officers Training Corps handling communications, the Staff College students are assigned to staff appointments first in the defense and later in the attack.

One of the more important phases of the course comes during the latter months

when a detailed study of the United Kingdom's and United States' approaches to problems of amphibious operations is made.

Using a comprehensive method of lectures plus detailed model demonstrations, a team from the Combined Operations School at Flettington, England, conducts an 8-day presentation on this vital phase of modern warfare. More than 90 percent of the instructional time is devoted to playlets and model demonstrations. The eight officers on the British team portray about 35 different characters in the course of the amphibious operations study. In

order to put their ideas across, they use 90 diagrams and nearly 500 stage props.

The United States team follows much the same pattern. However, their presentation of the American approach to such operations takes only 3 days.

Both squads stress the tri-service aspect of landing operations and the necessity for teamwork. Technical problems inherent to amphibious operations are studied in detail. Among the more important lessons taught is the need for close support from the Navy and Air Force during the landing of troops on an enemy-held beach.

The Sicilian Campaign—1943

Digested by the MILITARY REVIEW from an article by General Fridolin von Senger und Etterlin, Commander of the German forces in Sicily, 1943, in "The Irish Defence Journal" (Ireland) June-July 1950.

The account of operations in Sicily from the Allied viewpoint was presented in the February issue of the MILITARY REVIEW. This article is an account of the same operation but from the Axis viewpoint.

Permission to reproduce all or any part of this article must be obtained from the Editor, AN COSANTOIR (The Irish Defence Journal), Red House, Infirmary Road, Parkgate, Dublin.—The Editor.

IN JUNE 1943, I was recalled from the Eastern (Russian) front and was given command of the German troops in Sicily. However, before going there I was summoned to Berchtesgaden to be given instructions by Hitler.

He spoke of the reverses dealt to the Axis by the Allied landing in North Africa, without dealing too closely with the losses incurred. He dwelt on the great danger that would have threatened the Axis had the Allies decided immediately to jump from the African coast to the Italian main-

land. He came to the amazing conclusion that the Allies, by postponing this action too long, had lost the battle in the Mediterranean! He thereby evidently meant to stress my responsibility as to the defense of Sicily.

This cannot have been his real opinion; for after reporting to him, I was received by Field Marshal Keitel and General Warlimont, separately, both of whom were quite outspoken about the situation. An Allied landing could not be withheld, as neither the fortifications nor the forces available were strong enough to repel an attack.

The arguments used by Hitler were, at any rate, a fine example of the strategy of wishful thinking. At least they struck me as such, as I considered my responsibility.

Hitler also spoke of the political situation, and here his conclusions were more up to the point. He foresaw the imminent "treason" of Italy, which was the result of "antifascists," like the royal court, the nobility, and the general staff.

Landing in Sicily

When I arrived in Rome, I had conferences with Field Marshal Kesselring, who was the commander in chief of the German ground forces, and with Field Marshal von Richtofen, who commanded the air forces. It soon became clear that difficulties were in store even from the point of view of German-Italian relations. At Berchtesgaden, I had been told that I was to lead the campaign exclusively with the German forces, although I was nominally attached to the Italian Army commander, who was commander in chief in Sicily. Hitler's directive was founded on the likelihood of Italian treason. How I was to lead a campaign on the isolated Island, when the bulk of the Italian forces could not be relied upon, was a question which did not seem to harass Hitler. Fortunately, Keitel and Warlimont were more conscious of the problem.

Kesselring, on the contrary, was of the opinion that for political as well as for tactical reasons I should aim at a close co-operation of the German and Italian troops by accepting the leadership of the Italian commander in chief. For such was the agreement between the mutual governments, the Italian Government having argued that unless they were now given command in the defense of their own country the Italian people could not be expected to hold fast much longer.

Field Marshal Kesselring accompanied me on the flight to Sicily on 26 June 1943. After our arrival, we took two helicopters to continue our journey into the interior where the Italian commander in chief had his headquarters.

Along the coast there were six Italian divisions, whose value was not to be calculated as anything more than coast guards. They had neither transport nor heavy weapons. But there were four normal Italian divisions, two of them in the eastern half (Livorno and Napoli Divisions) and two in the western half (Assietta and Aosta Divisions). Even their equipment

and mobility were rather limited and not up to modern standards, as the Italian armor had been neglected by the Fascist government.

In the east of Sicily, there was one German division made up of the remnants of the divisions that had perished in Africa. It was called the 15th Panzer Grenadier Division. Simultaneously, another division (the Hermann Göring) was transferred from France to Sicily.

The Italian commander in chief calculated the combat value of one of his four mobile divisions equaled about a quarter of an enemy division, while attributing to each of the two German divisions about half the value of an enemy division. He was not far from right, as the 15th Panzer Grenadier Division was just being formed, while the Hermann Göring Division had other organizational problems.

Possible Landing Sites

There were no indications as to the enemy's intentions. He was just as likely to land in the east of the Island as in the west. The coast in the west was flatter than in the east. But even here, the plains of Catania and Gela offered good opportunities for combined landings at either location so that the Axis forces in the west would be cut from the Messina Straits.

The coasts of Sicily were not fortified. German artillerymen and engineers endeavored, with little success, to influence Italian coastal batteries. There were, as always in such cases, differences of opinion as to the suitability of the various kinds of positions. The Italians preferred positions out of range of enemy naval artillery, while the Germans preferred positions which would enable the batteries to fire at a landing force while it was still at sea. These controversies could not be resolved before the enemy landing.

Enemy Air Superiority

The enemy at that time dominated the air. The majority of German air units,

which had been stationed on the Island, had already been destroyed on the ground, and the airfields were more or less out of use. All that was left of the German air force were the antiaircraft batteries and the nonflying units. The numerous antiaircraft batteries had a threefold task. They were supposed to protect transport across the Messina Straits; they had to check enemy air forces attacking the Axis troops on the Island itself; and they had to take part in the defense of the coast against amphibious attack.

One of the chief problems to be faced was that of transport. The two German divisions were not fully mobile in the sense of a mechanized division. The 15th Panzer Grenadier Division was transferred to the west of Sicily by means of transport units, a fact not too encouraging for the future employment of this division. As the Hermann Göring Division had but two infantry battalions, the 15th had to leave an infantry regiment in the east. This regiment had no means of transport, so it was to be moved, in case of urgency, by transport units of the supply services according to orders given by Kesselring. These supply units were not available for the time being, for they had the task of shifting the dumps and depots from the west, where they had been located at the time of the African campaign, to the east.

Personnel Problems

I had been told at Berchtesgaden that there were 30,000 men on the Island apart from the two divisions. It had become an illusionary expedient to look upon numbers as fighting strength. In Sicily, most of the 30,000 men were found in transport services and in the crews of the antiaircraft batteries.

If one disregarded the Italian divisions, whose participation in the defense of the Island was doubtful for political reasons, I had, in fact, two divisions at my disposal. One of them, the 15th, was more

or less immobile; and the other, the Hermann Göring, included, at this time, only two battalions. It remained a secret where the other two were, for the division commander was in no way responsible for the organization, nor had he to answer to the tactical commander concerning problems of the organization of the division. In all such matters, he was responsible exclusively to Göring. Göring wanted the other two battalions somewhere else, and there it was. On the other hand, a battalion of *Tiger* tanks, which had been stationed on the Island before the Hermann Göring Division arrived, and which had been incorporated into the 15th, was transferred to the Hermann Göring without regard to local exigencies. Everybody—the Italians included—expected miracles from the *Tiger* tanks, and therefore the Hermann Göring was to have them.

Lack of Authority

I was without authority in all these matters, as I was not, officially, commander in chief of the German divisions, but merely in the position of a liaison officer to the Italian commander in chief. Yet, I was responsible to the High Command of the Armed Forces [*Oberkommando der Wehrmacht* (OKW)] for the conduct of the War in this sector. For this purpose I had but a small and utterly inadequate staff. I did not even have at my disposal such communications as to enable me to be in radio contact with the two divisions or with Kesselring, the German commander in chief in Italy. Nor was Kesselring, himself, nominally my commander in chief, as the Italian Supreme Command had made German noninterference one of the principal demands on the German OKW.

Even if I had meant to make a war on my own—as would have been the way of some of the “active and ruthless” leaders so much in favor with the Nazi OKW—how was the problem of the four mobile

Italian divisions to be solved? The immobile coast guards could be left out of tactical considerations, but these four divisions had to be handled. It could only be done by seeking as much influence as possible with the Italian commander in chief to whom I was attached, and on whose means of communication I had to rely.

It became clear to me from the beginning that the task given me was not only extremely difficult, but also that a campaign impended in which one of the belligerents was to bring the three branches of modern warfare—navy, army, and air force—into combined action, whereas the Axis side had only ground forces.

The Allied Invasion

The enemy landed, on 10 July, on that part of the Island where we expected the landing to take place, that is, in the south-east. But his landing tactics came, nevertheless, as a surprise. He did not, as we had expected, choose Gela on the south coast and Catania on the east coast, from where he might make a rapid advance employing tanks. He landed on practically the whole of the southeastern corner, even at spots looked upon by us as most unsuitable for a landing.

The Italian coast guard divisions practically did not resist, and feeling their hopeless inferiority withdrew into the interior of the Island. The German OKW concluded at once from their behavior that the Italian coast guards were either totally demoralized or under the influence of treacherous leadership. But I doubt whether even better equipped German troops would have been able to resist. The defender, in such conditions, is exposed to the fire of naval artillery, against which he is powerless.

The enemy had prepared for the landing by eliminating the Axis air forces located on the Island. While he landed, he dominated the air. Paratroops were dropped behind the German counterat-

tacking forces. They did not have any far-reaching result, but they scattered and harassed the Axis troops.

Axis Counterattack

The Italian commander in chief was relying almost exclusively upon the two German divisions and on the success of their counterattack. There seemed to be only one direction of counterattack which might bring about at least an immediate tactical success—toward Gela. This attack was launched on 10 July. I went to the Hermann Göring Division to watch the attack, and on the way to the forward battalions I passed *Tiger* tanks trying to find their way to the shore along mountain roads which were too narrow even for peacetime requirements. They were hampered, in searching the country, by the olive trees covering the slopes. Yet, these heavy tanks dared not move without extreme caution on account of the enemy parachutists, hidden by olive trees, who were a constant menace to the tanks. After reaching the division, I found the commander of the tank regiment practically out of action and incapable of moving, because of an attack of lumbago. As the man made an unfavorable impression on me, I asked for a successor. The same thing was found necessary with the commander of the infantry regiment. These personnel deficiencies were not casual or sought for by myself. They were the result of the chaotic management of military personnel. This unit happened to be a division of the *Luftwaffe* and, therefore, out of control of the Army's War Office Personnel Department.

Allied Beachhead

On the following day, however, the Hermann Göring Division almost reached the sea. The enemy withdrew on this particular small sector and, when I arrived east of Gela, I could see enemy troops being re-embarked under protection

of an artificial smoke screen. What a sight it was to watch the Allied fleet, dozens of ships, absolutely unharassed, lying peacefully off the Sicilian south coast or moving to and fro with hundreds of other ships at other parts of the coast. I gave orders to the Hermann Göring Di-

flanking the Hermann Göring Division with forces moving north from Licata. The 15th might be able to check this advance, which seemed the most dangerous for the moment, while the Italian Aosta and Assietta Divisions were to link up with the 15th farther west and then face south.



A landing ship, tank, unloading on D-day near Gela, Sicily. The Allied landings on 10 July 1943 encountered only slight enemy resistance initially.—US Army photo.

vision to wheel east in order to attack the enemy advancing north toward Comiso where he tried to get hold of the airfield.

But, even had the division succeeded in doing as ordered, it would not have been able, with its two infantry battalions, to push the enemy back into the sea.

By now I could almost take it for granted that the enemy would not extend his beachhead to the west of the Island. I, therefore, decided to move the 15th Panzers from the west into the Canicatti-Caltanisetta area. It might be possible, at least, to prevent the enemy from out-

They were not being attacked there, for the time being, and rendered valuable service with a defense system stretching in the interior from east to west. In this way, we might succeed in initiating a movement, planned beforehand, aimed at withdrawing toward the so-called Etna Line, keeping contact with Palermo.

Kesselring Returns

On 12 July, Field Marshal Kesselring appeared again in my headquarters at Enna. The conditions had become considerably worse. The foremost parts of the Hermann Göring Division had to be

taken back into the Caltagirone-Vizzini area as their isolation east of Gela involved the risk of being encircled and annihilated. Our aim was, from now on, to establish contact between the 15th and the Hermann Göring Divisions without moving the 15th farther east, for it had to remain at Canicatti, through which the road ran north from Licata. However, the Italian Livorno and Napoli Divisions were not in condition to establish this connection between the 15th and the Hermann Göring Divisions. There were wide spaces uncovered east of the Hermann Göring Division and the regiment attached from the 15th Division. Between this regiment and the Hermann Göring Division there was no contact either.

Under these circumstances, it was not difficult to persuade Field Marshal Kesselring that the idea of "throwing the enemy back into the sea" was utterly impracticable. Both the Italian commander in chief, General Guzzoni, and I rejected Kesselring's offer to transfer another division from the Italian mainland to Sicily. Maybe Kesselring still hoped that it might be possible to turn the tide with such a measure. Guzzoni and I, though welcoming forces which might be useful for occupying the Etna Line, held that the movement of another division meant overloading the transportation facilities across the Messina Straits.

A Parachute Landing

Events in the battle line moved quickly. The Hermann Göring Division fought its way back gradually into the Catania Plain, but had not succeeded yet in establishing contact with its regiment fighting to the east. It was therefore decided, in Rome, to drop a regiment of the 1st Parachute Division from the air into this gap. This regiment was dropped too far south and was lost for days behind the enemy lines without doing any service. The regiment managed, however, to find its way back

to the German lines at night, incurring losses of arms and equipment.

In the Catania Plain a battle was now in full swing. Apart from the parachute regiment, other elements of the 1st Parachute Division were transferred to Sicily and incorporated into the Hermann Göring Division. The lack of infantry in the Hermann Göring Division was thus compensated. The enemy evidently was trying to break through to Messina and so cut off the Axis forces from their route of retreat to the mainland. Contact was now established between the single German groups that had been fighting independently.

The front was gradually stabilized. German troops suffered heavy losses from concentrated enemy fire, not only from their land forces but also from the sea.

The 15th Panzers during this time had succeeded in holding the most dangerous enemy advance, that is, from Licata in a northerly direction. If this advance could have been made, not only all smaller forces and services still around Palermo would have been cut off, but also the Etna defense system could be destroyed. Instead, the enemy gradually drove the remaining forces in the west of the Island back and so enabled the Axis command to fall back on positions connecting the right wing of the forces defending Catania and the entire region south of Etna with the north coast.

Reinforcement

In the meantime, the German commander in chief in Italy decided to transfer another division, the 29th Panzer Grenadier Division, from the Italian mainland to the Island. The division rendered valuable service in establishing the line just mentioned. The German forces now began to be somewhat more adequate for the task allotted to them. There were at least twice as many field troops as at the beginning, and the line to be held shrank to about a quarter the length of

the one which we defended in the first day of the landing. The Italian divisions that had been located in the west, and consequently had suffered less casualties than the ones in the east, recovered and were partly incorporated in the German forces.

Field Marshal Kesselring appeared again on the Island on 17 July. He seemed to be disappointed at the course of events, and it looked as though he still hoped that with the transfer of the 29th it might be possible to take the offensive again. He informed Guzzoni and myself that it had been decided that the German forces, now larger than the Italians, should be commanded by a German army corps, the XIV Panzer Corps under General Hube. Hube was not to take over the command at once, but was charged with the choice of the location of the Etna Line, where a longer resistance was planned to facilitate the withdrawal from the Island.

Change of Command

The nomination of Hube did not make me very happy. It was quite clear that an army corps had become more and more necessary as I had not been provided with the necessary staff nor with the means of communication to carry out my mission. It rather looked as though I was being replaced by one of Hitler's favorites. Events on the political horizon were drawing to a climax. There had arisen considerable friction between Italian and German troops at Messina. The German commander in chief in Italy had immobile battalions transferred to the Island. When they arrived at Messina, they were given orders from Rome to confiscate Italian trucks belonging to Italian units. These, in turn, were given orders not to yield to threats nor to power. The Italians knew too well that the War was lost, and that neither they nor the Germans had been able to defend Italian territory. The Italians were wise enough to recognize the moment when ending the War was the only

thing left to do. However, the German Nazi radicals wanted to go on at all costs. It was natural enough that, quite apart from considerations of a technical nature, OKW was eager to replace me by a man more to their liking.

Yet, I think collaboration with the Italians was the only way to solve the problem with which I was faced at the time of the enemy landing. Making use of the Italian divisions had enabled us to avoid complete disaster and to withdraw two weak divisions according to prestabilized plans. I could hand over to the commander of the XIV Panzer Corps, General Hube, a coherent front, behind which he could form a new line of resistance.

He was no more able than I to launch any offensive, and continued the movements initiated by General Guzzoni and me. The 15th Panzers gradually were being taken back into the center of the new Etna Line with the newly arrived 29th Panzer Grenadiers on the right and the Hermann Göring Division on the left. The new line ran from San Stefano on the north coast to Nicosia, southwest of Etna, and from there to the east coast, south of Catania. The Axis forces were to occupy yet another still shorter line stretching from San Fratello to Troina, and from there to Acireale.

The fact that not only the men but practically the bulk of the most valuable war matériel could be transferred to the mainland was due to good luck. The enemy neither tried to cut off the retreating forces with his fleet by advancing into the Messina Straits, nor did he attempt to land, in the rear, on the north coast while we were still fighting in isolated groups scattered all over the Island.

The German OKW was not content with General Hube taking over the command of the German forces, but insisted on his taking the command of the entire front, while still nominally under the command of the Italian Sixth Army, led by Guzzoni.

Collapse of Fascism

From the moment when the command of the German forces had been transferred to the XIV Panzer Corps, I was more or less unemployed, as General Guzzoni, to whom I remained attached, was doing less and less.

Meanwhile, we moved our headquarters farther north, high up in a pass midway between the northern outlines of Etna and Capo Milazzo on the north coast. Here, at the end of July, we heard of the collapse of the Fascist régime. The régime collapsed without apparent revolutionary troubles. The dismissal of Mussolini was looked upon by the radical Nazis as the act of treason. We did not feel it as such. I do not believe that General Guzzoni, for example, had betrayed us.

Departure

The last days in Sicily were not, as might have been expected, days of panic. The impression prevailed that things would proceed normally and that the Al-

lies would not attempt to cut the remaining forces from their way of retreat. The Messina Road was protected against air attack by concentrations of antiaircraft batteries, so that our losses were not too heavy considering the precarious situation of the Axis forces. Yet, there was a growing tension among the troops.

I was recalled in the first week of August, as my mission had practically reached its end and could be just as well fulfilled by my general staff officer.

When I reported to Field Marshal Kesselring in Rome on 11 August, I did not have the impression that he still blamed me for the course of events in Sicily. Probably he had, by this time, overcome his disappointment, as he knew that even OKW had not expected better results. In fact, it had expected worse! He also acknowledged that the tactical principles applied by me were continued logically under Hube, and that mine certainly had been the more difficult period.

The keystone to an integrated, economical defense is mutual confidence and interdependence upon the services. We in the Army are dependent upon the Air Force to transport our airborne elements, to provide us air cover and close support for our armies. In turn, the Air Force is dependent upon us to provide antiaircraft defense and to seize and hold advanced air bases from which they can operate and to furnish much of their broad logistical support. Both the Army and Air Force are dependent upon the Navy to control the seas, and to move troops and supplies over ocean lines of communication to theaters of operation. The Navy in turn will operate, for the most part, from bases which are defended by the Army.

General J. Lawton Collins

German Close-Support Aviation

Translated and digested by the MILITARY REVIEW from an article by Major General Hubertus Hirschhold, of the former German Luftwaffe, in "Flugwehr und Technik" (Switzerland) April 1950.

THE close-support action in the German Luftwaffe was created on the basis of experiences gained during World War I and in the fighting in Spain. At first, with the restoration of the Luftwaffe, only fighter aviation was provided for close-support operations. With the creation of dive-bomber formations equipped with Ju-87 Stukas, the mission of close support assumed more prominence. The first special close-support formation was created shortly before World War II. From the very beginning of the War, the dive-bomber formations, using Ju-87s, were used mostly as close-support aviation. They achieved outstanding success when the Luftwaffe had air superiority. They were seldom used in accordance with their intended operational employment, however. The Ju-87 could no longer be designated as a modern plane, even at the beginning of the War. It was too slow and could not be protected sufficiently against enemy fighter aircraft. For this reason, with the continually increasing Allied fighter defense, the Ju-87 formations had to be re-equipped with Fw-190s, which were suitable for close-support employment.

The creation of special antitank planes and the organization of antitank formations resulted from the necessity for halting the Russian armored break-throughs. Without special weapons for antitank combat, the earlier employment of close-support planes against tanks had not been especially successful.

Night-fighter formations were organized during the course of the War. They were first organized from nuisance raider squadrons, which were equipped with training planes as an emergency measure,

and whose mission was to harass the enemy by means of night bombing attacks. After being equipped with the same type planes used in daylight close-support operations, effective support was given the ground forces at night.

In 1943, the organization of close-support aviation was divided into daylight close-support formations (which were former close-support and Ju-87 dive-bomber formations), antitank formations, and night-fighter formations (which were former nuisance raider squadrons).

In addition to the close-support formations, single and twin-engine fighter formations and twin-engine bomber formations were employed in close-support missions.

Mission, Organization, and Equipment

The mission of the close-support aviation was to provide tactical support for the Army up to a depth of about 35 miles, to support paratroop and other air-landed operations, to support naval forces in the coastal zone in accordance with the range of the close-support planes, and to support landing operations.

The close-support formations consisted of groups of from two to four squadrons. The antitank groups and the night-fighter groups were independent, while the close-support groups for daylight fighting were combined in wings of three groups. Each squadron was equipped with 16 combat planes. Each group and wing headquarters had four combat planes. From the standpoint of personnel and technical services, all of the close support formations could take care of their entire needs and did not have to depend on any additional ground services. Thus, each group

had its own maintenance platoons for planes and motor vehicles and its own signal service platoon. These platoons were included in the group headquarters companies. Furthermore, the close-support formations were fully motorized and able to move about freely with their organic transportation. All group and wing headquarters possessed their own liaison and courier planes, but they lacked transport planes. When the ground sections of the formations were required to move great distances and were unable to make the changes in the required time, they were forced to carry out these movements with the aid of the *Luftwaffe* command centers.

The close-support formations were equipped with complete ground and air signal communication. The radio traffic from the various army units to the Air Force command center could be monitored. In addition to the radio nets which they used while in action, the close-support planes were able to communicate with the tactical air control parties in the front lines. Radar-guided planes were correspondingly equipped with additional equipment.

At first, the armament of the close-support planes consisted of only two machine guns; later, they were armed with 20-mm guns and machine guns. The antitank formations were equipped with 30-mm, 37-mm, and 50-mm guns and used special armor-piercing ammunition. By the end of the War, they were equipped with hollow-charge rockets. Usually, the following types of bombs were used by the close-support planes: against fixed targets, high explosive bombs of from 100 to 1,000 pounds; against personnel and motor vehicles, fragmentation bombs of from 2 to 1,000 pounds. Small bombs (from 2 to 4 pounds), dropped in containers, were particularly effective against troop units. The 8-pound hollow-charge rockets gave good results against tanks.

As a rule, the close-support planes were not equipped with bomb sights. The re-

flector sights of the plane's weapons were used. Selected pilots were given a few planes equipped with self-calculating sights (gyroscopic sights), with which extreme accuracy was attained.

Better flying ability at the cost of the pilot's safety was preferred. Hence, only a few of the close-support planes were provided with armor thick enough to protect the pilot. The planes with which the close-support formations were equipped were single-seaters, such as *Ju-87s* and *Si-204s*. The fighter formations which operated in the daytime were equipped, at first, with *Hs-123s* and *Ju-87s*, later with *Me-109s* and, by the end of the War, all with *Fw-190s*. The great maneuverability, technical simplicity, and high degree of suitability for operating from crude airfields possessed by the *Hs-123* and *Ju-87* were great advantages. If strong Allied fighter defenses were encountered, however, they required too much fighter protection, while *Me-109* and *Fw-190* formations required only supplementary fighter protection in cases of Allied air superiority. The air-cooled engine of the *Hs-123* and *Fw-190* decreased their vulnerability considerably.

The first antitank formations were equipped with twin-engine planes of the *Hs-129* type, armed with a 30-mm and, later, a 50-mm gun. Then came the *Ju-87s* with their 37-mm guns. These guns gave good results against tanks, particularly when used against their less heavily armored portions. The maneuverability of these planes was of great importance especially when flying within range of light ground defense weapons. Later, when the Allied armored formations were given increased fire power with antiaircraft artillery, it was more practical to employ the faster *Fw-190s*, armed with hollow-charge rockets.

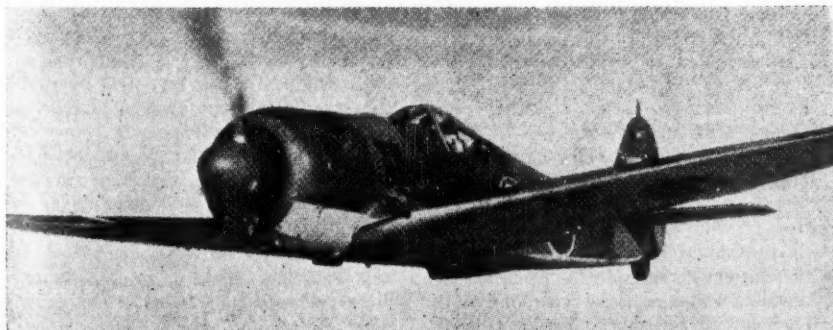
At first, night-fighter formations were only of nuisance value. Later, after target marking by parachute flares and



The *Ju-87*, above, was the principal dive-bomber and ground attack plane used by the Germans. Early in the War, it was supplemented by the *Hs-123*, below.



The *Fw-190* fighter-bomber, below, was more successful than the *Ju-87* in a close-support role because of its ability to protect itself against fighter opposition.



bombs had come into use, greater quantities of bombs were dropped by *Ju-87s*, twin-engine *Si-204s*, and *Fw-190s*. Radar guidance of the illuminating planes was a necessary prerequisite in the employment of close-support planes at night.

Operational Control

The employment of the close-support formations was controlled by the higher *Luftwaffe* command authorities such as numbered air forces, air corps, air divisions, and air commanders who co-operated with army command authorities in the army groups, armies, corps, and divisions. The *Luftwaffe* command authorities determined how their close-support formations would be used by means of the following:

1. Reports of the reconnaissance squadrons operating after the strikes were made.
2. Army reports transmitted by radio or wire by the *Luftwaffe* liaison officers with the army authorities.
3. Requests for support transmitted by army and *Luftwaffe* command authorities or reported by air-liaison officers.
4. Operation reports of all committed air formations after their return from their missions.
5. Reports of the *Luftwaffe* radio interception service which listened to the enemy's radio traffic.

The basic requirement in all successful close-support aviation activity was the obtaining of air superiority. In the case of strong enemy fighter opposition, fighter formations had to be employed for the protection of close-support planes. Those close-support formations, which were equipped with *Me-109s* and *Fw-190s*, provided their own security against opposition in the case of weak enemy defense.

Conduct of the Operations

A definite alert period of 20 minutes, 1 hour, or 2 hours was assigned the close-support formations, depending on the situation. In the short alert periods, the

formations had to be loaded with bombs suitable for the destruction of the anticipated objectives. In the long alert periods, the type of bomb load was designated in the operation order.

Before flying to the target, the close-support formation assembled in the vicinity of the airfield and flew in combat formation to the action zone. In an operation with fighter protection, the fighter formation rendezvoused with the close-support formation at a certain time, place, and height, according to the operation order. Such protection was most effective when a previous understanding was reached by radio or wire between the fighter and close-support formation commanders.

Approach routes and flying altitudes were chosen to avoid action with ground defense units. Clouded areas were chosen to conceal the formations, in order to achieve surprise. Low flights over enemy areas were rarely made unless weather conditions, such as low clouds, permitted them.

The attack was conducted, primarily, in accordance with the nature of the targets and the anticipated ground defense.

The daylight targets of the close-support planes were mostly pin point in nature. Surface targets, such as troop concentrations, were attacked only at night. Included in the variety of targets attacked by close-support aviation were: gun positions, march columns, tanks and vehicles, railway equipment and installations, fortifications, and depots and dumps.

Depending on the type and identity of the targets and the existing defense, the following methods of attack were used:

1. Diving attacks from altitudes of from 7,000 to 17,000 feet, at an angle of approximately 60 degrees, down to an altitude of from 2,000 to 3,000 feet, where the bombs were released.

2. Slanting attacks from heights of from 2,000 to 5,000 feet, at an angle of from 20 to 50 degrees, with the bombs

released at heights of from 1,000 to 2,000 feet. Here, the plane's weapons and rockets were fired.

3. Low-level attacks from an altitude of 300 to 1,000 feet. The type of bombs and fuzes employed determined the altitude of the plane. Here, again, the plane's weapons and rockets were fired. This was the usual type of attack used by antitank planes in combating tanks.

In every close-support and antitank attack, an effort was made to carry out as many attacks as possible with the plane's weapons against various targets. The bombs were dropped one or two at a time; only in the case of a strong defense were all the bombs dropped at once. If enemy fighters appeared, the *Me-109* and *Fw-190* close-support formations conducted the operation in such a way that one part of the formation carried on the attack against ground targets, while the other part took over fighter protection activities after having dropped its bombs. In like manner, in case of strong enemy ground defense, part of the close-support formation was assigned the task of attacking the defenses. Antitank attacks were coupled with normal close-support operations as much as possible, in order that the close-support aviation might silence the antiaircraft artillery positions for the benefit of the antitank planes. If the targets were close to the front, altitude was gained over a friendly area after each attack before launching further attacks.

The attacks of the night-fighter formations were usually conducted by single planes. On bright nights, formations of two planes or, at most, of about five planes were used. The approaches to the target were made at heights out of range of the light and medium antiaircraft artillery. Depending on the type of plane and sights used, the bombs were dropped, one at a time, in horizontal, diving, or slanting attacks. If the light or illumination was adequate, recognized targets on the ground were attacked with the plane's weapons.

Antiaircraft artillery positions which attempted to prevent the attacks were immediately attacked with both bombs and the plane's weapons.

Co-ordination

If the close-support formations were not assigned definite targets, they sought out targets themselves on the battlefield or were directed to them by the ground forces. The co-operation between the air and ground forces was managed in the following ways:

1. By means of visual signals such as ground panels, smoke signals, artillery fire with colored smoke ammunition, Very signal lights, and, at night, lanterns. By these means, the friendly forces were able to avoid unintentional attacks by their own planes. Also, they were able to mark the front line, to indicate points of enemy resistance, or the distance and direction to these points, and to transmit requests for support.

2. By radio. Tactical air control parties were assigned to army formations such as divisions (especially armored divisions) and combat teams in sectors in which there was to be strong air support by close-support aviation. These parties, operating from the front line and, in the case of armored formations, operating from armored command cars, assigned targets to the close-support formations and transmitted requests for support. They also transmitted the reconnaissance reports of the close-support formation to the army formation commanders. Target descriptions were effected by means of maps and through the announcement of distances and directions with respect to certain points.

Navigational preparations were made for every operation. Routes and flying times were calculated. Maps with scales of 1:300,000 to 1:1,000,000 were employed for the flight to and from the target, but in the zone of action maps with scales of from 1:100,000 to 1:300,000 were used.

Aerial photographs and controlled mosaics were employed in order that even the smallest targets might be found.

Night-fighter formations operating in bad weather were guided to their targets by radar.

From the standpoint of navigation, the operations of the night-fighter formations were carefully prepared. In addition to radio beacons and numerous beacon lights, other emergency light sources were used as navigational aids.

Training of Pilots

Pilots reporting to the close-support aviation schools who, at the conclusion of their training, appeared suitable for use as close-support pilots received further training in close-support training wings and, afterwards, in the close-support replacement training squadrons.

In the close-support replacement training squadrons, training in formation flying, bomb dropping, firing from the air, and aerial combat was carried on in operational type close-support planes. Thorough instruction in military and naval tactics, as well as in co-operation between close-support aviation and the Army and the Navy, was given them. In the close-support replacement training squadrons, they were trained until ready for the front by flying tactical, combat-type missions, by exercises with army and naval formations, and by dropping live bombs. Pilots who appeared suitable for antitank service re-

ceived additional training in firing anti-tank weapons and hollow-charge rockets such as were used against tanks. All pilots who did not meet the necessary requirements were released and made available for other assignments. Only the best and most experienced from among close-support fliers on the front were employed as aviation instructors.

Summary

The commanding general of the close-support aviation was immediately responsible to the commander in chief of the *Luftwaffe*, and had the mission, in co-operation with the *Luftwaffe* High Command and the Army and Navy High Commands, of ensuring complete readiness for action and efficiency on the part of the close-support aviation. Specifically, he was charged with the supervision of the planning and direction of the continued technical development of the planes and equipment used by the close-support aviation, and the supervision of the planning relative to procuring weapons and other supplies for the close-support formations.

The commander evaluated the experience of the close-support aviation and, in collaboration with other sections of the *Wehrmacht*, interpreted the operational directives and supervised their practical application.

The last War showed that successful land and naval operations were largely dependent on effective close-support aviation.

The artillery capabilities of modern tactical aircraft extend and strengthen the fires of ground weapons and are extremely effective against tanks and other armored vehicles.

General J. Lawton Collins

The Case for a Lighter Tank

Digested by the **MILITARY REVIEW** from an article by Major
H. W. F. Appleton in the "Canadian Army Journal" May 1950.

7-1796

ANY time you want to live up to the conversation in the Mess, just announce: "The tanks we use are too big and slow. We should use light fast ones." This article supports the argument in favor of lighter, faster tanks.

It is taken for granted these days that, after gaining control of the air, air-landed troops are the best means of gaining and maintaining the initiative on the ground. The air-landed army's chance of success without tanks is slim. The need is a tank, powerful in an ordinary role, but also air transportable.

The Army's equipment is generally too heavy for air transportability. The determining factor in the weight of Army tank equipment is design. Facilities during 1939-45 had to be provided to handle 30- to 40-ton tanks and, therefore, designers did not feel restricted to lighter weights for other vehicles and equipment. Once it is established that the tank can be made lighter, then all other equipment can be proportionally lightened. A lighter general purpose tank will not only make an air-landed army more practical, but is needed to reduce the large administrative organizations that hamper a modern army's movements.

Thick Armor Obsolescent

The antitank gun and the shaped charge have made thick armor of doubtful value. The necessity for air transportability completes the conversion of 30- to 40-ton tanks into museum pieces.

The tank's armor is supposed to protect its crew. However, the tank's only real protection is mobility. Why, therefore, restrict mobility with heavy, nearly useless armor? Make the armor protect the crew against small arms fire and splintering,

but avoid the worst effects of gunfire by speed and maneuver. It is safer to be in a light, fast tank when moving against modern weapons.

It is frequently forgotten that the tank brings to the battlefield a means for direct fire that the foot soldier cannot carry. The long ranges and the antitank functions of the current fashions in tank armament are a digression from the true purpose of a tank. A recoilless gun, mounted on a small turret, is needed to effect a substantial saving in tonnage, both in the weapon itself, the turret ring, and the vehicle. The coaxially mounted machine gun should remain. The main weapon should have an accurate range of up to 1,000 yards. If the tank is small enough, and can accelerate quickly, it is in little danger at ranges greater than 1,000 yards.

Reduction of Crew

It is within the bounds of practical engineering to mount sighting devices so that tank guns automatically can be brought on to targets sighted through the crew commander's periscope. The gunner thus becomes unnecessary as a crew member. A smaller fighting compartment would then be practical, further reducing the tank's weight.

Better transmissions such as "fluid drive" reduce power loss, permit the use of a lighter motor, reduce driver fatigue, and make an assistant driver unnecessary.

Light in weight, with a low silhouette, wide tracks, and rapid acceleration, the little tank would be an elusive and disturbing target. It need have no less "punch" than the 36-tonner. Nor need one be concerned about light tank rifles.

Everyone knows how hard it is to hit a running man with a single shot. Best of all, the little tanks, being inexpensive, could appear in swarms, and not just in threes or fours.

Our little tank is not designed to deal with enemy heavy tanks at ranges of more than 1,000 yards, nor should any tanks have such work as a primary task. The armored regiment should not be without antitank guns as an integral part of the unit. Self-propelled, the guns should move in support, shepherding the tanks, just behind, or on flanks, moving from one commanding point to the next and dealing at long range with enemy tanks. Even so, a rocket gun of 1,000 yards' range will give the tanks plenty of hitting power to knock out enemy tanks if forced to do so.

The flaw in the argument is the absence of a practical rocket or recoilless gun, accurate at medium range. Current weapons of this type are a very close approach to this need, and their development should not be too difficult. The overriding consideration is that air transportable tanks and guns are a *must*. Therefore, the nation which produces the gun for its low, light, fast tank will have made a major step forward in its capacity for decisive counteroffensive action against long-range attack, such as most people seem to feel will open the war of the future.

Specifications

Here are specifications for the suggested tank:

General.—Use of light alloys such as aluminum or manganese wherever possible.

Armament.—Rocket gun, firing high explosive and hollow charge (antitank) projectiles. Mounted on the side of the turret,

the gun could be loaded from inside. Having no recoil, the rocket gun will make possible a small fighting compartment, a small turret ring and, therefore, a small tank. Add a machine gun, coaxially mounted.

Armor.—Protection against small arms and shell splinters. Speed and maneuverability is the main protection for the tank.

Suspension.—Christie type, for speed.

Tracks.—Wide, for covering soft ground.

Power.—Sufficient for rapid acceleration. A horizontally opposed motor might lower the silhouette.

Silhouette.—Low. (One felt that one was on a flagpole when perched in the turret of a 10-foot *Sherman*.)

Crew.—Commander, loader, and driver.

Waterproofed.—Up to the turret ring.

Weight.—Less than 10 tons, fully stowed.

It is easy to see that this little tank would be easier to maintain, would need fewer men per gun firing, and could be adapted for flame throwing, ammunition supply, and a host of other uses. What is more, we could probably make it in Canada.

Manufacturing tanks is a grave strain on even a great industrial power. The heavy tank of today, with its bewildering array of gadgets, could be made in Canada, but at the expense of other and quite as important items. A less vulnerable and cheaper means for getting more fire power into the fight is what Canadian tankmen need.

It is contended that the lighter tank, as described, is more practical for Canadian manufacture, and would be better on the battlefield.

If a future war comes, ultimately it must be concluded on the ground, like most of the wars of the past.

General Hoyt S. Vandenberg

German Wehrmacht Propaganda in World War II

Translated and digested by the MILITARY REVIEW from an article by Professor Dr. Kurt Hesse in "Allgemeine Schweizerische Militärzeitschrift" (Switzerland) August 1950.

THE *Wehrmacht* Propaganda Section in the German High Command was established, in April 1939, in the form that was to be assumed in case of mobilization.

Three important ideas, developed from the experiences of World War I, lay back of its establishment, namely that:

1. Propaganda is an important combat means.
2. The enemy's efforts to disintegrate one's own forces must be fought.
3. War reporting requires a previously prepared organization.

The importance of the formation of this Section was heightened by the bitter realization that the German defeat of 1918 was due mainly to the enemy's propaganda.

The destruction of the German Army by the Versailles Treaty and difficulties in national policy stood in the way of the creation of an organization for military propaganda. The formation of a Signal Center, in which both the Army and the Navy were represented, was the first step in establishing this new organization. It expanded gradually and, with the beginning of the 1930s, assumed increasing importance. It was vital that a distinction should be made between this organization and the Reich Ministry for Public Enlightenment and Propaganda (*Reichministerium für Volksaufklärung und Propaganda*). Therefore, an agreement was reached, 2 years before the War, to the effect that the Reich Propaganda Minister should be the officer in charge of war propaganda.

The *Wehrmacht* Propaganda Section (*Abteilung Wehrmachtpropaganda*) had certain missions to perform, such as the dissemination of propaganda against the enemy, war reporting, and troop information and education. These tasks were

to be performed by propaganda or reporting companies and platoons, which appeared, in an experimental form, in the *Wehrmacht* maneuvers in 1937, as well as in Czechoslovakia in the autumn of 1938 and the spring of 1939. However, neither the propaganda and reporting companies, nor the *Wehrmacht* Propaganda Section, were tested completely when the War began. Due to this deficiency, there were continuous developments and structural changes in the *Wehrmacht* Propaganda Section up to 1945.

Organizational Developments

The *Wehrmacht* Propaganda Section developed in four phases during World War II. These were:

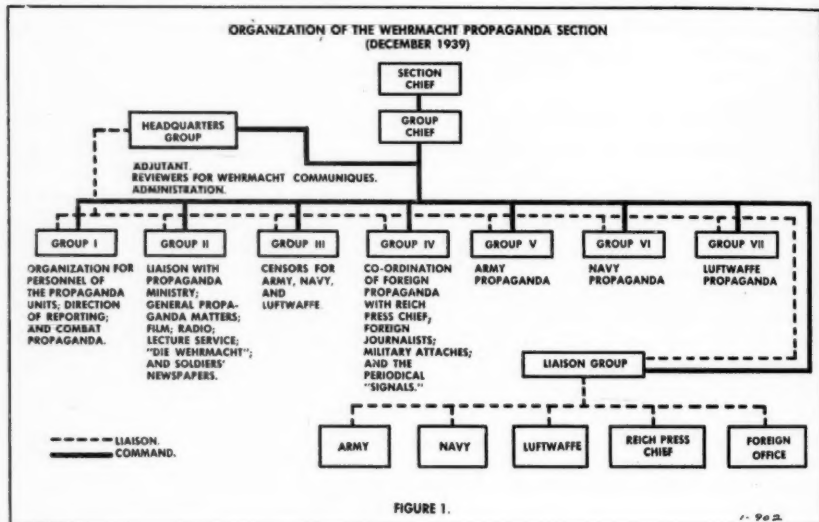
1. From the beginning of the War until December 1939: the tryout period, which ended in the first confirmation of the organization's effectiveness.
2. From the end of 1939 until late autumn of 1941: the expansion of the *Wehrmacht* Propaganda Section, accompanied by a decentralization of activities to the press groups of the different branches of the service.
3. From the spring of 1942 until the autumn of 1944: the centralization of propaganda under the Chief of the *Wehrmacht* Propaganda Section, and a thorough reorganization of the organization.
4. From the autumn of 1944 until the end of the War: the recession of the *Wehrmacht* Propaganda Section in the face of political propaganda and the influence of the SS.

In order to obtain an accurate account of the organization, this article will begin with the structure of the *Wehrmacht* Propaganda Section which existed in December 1939 (see Figure 1).

The Section was commanded by Lieutenant Colonel, later Major General, Hasso von Wedel, a general staff officer who had little contact with press matters before he assumed office, but who showed himself to be an excellent organizer.

1. Reinforcement of the *Wehrmacht* Propaganda Section with reserve officers, as reviewers, and corresponding subordinate personnel.

2. Preparations for the activation of the propaganda troop units, the formation



Von Wedel generally operated from Berlin; but, during the second half of the War, he also established an office in the area of Hitler's headquarters. He received his orders from General Jodl, the Chief of the *Wehrmacht* Command Staff. Von Wedel's position was a difficult one for the different services often went their own way, and there were always disagreements between the *Wehrmacht* High Command, the Reich Propaganda Ministry, the Foreign Office, and other civil authorities.

Mobilization Measures

In the fall of 1939, the following measures were taken to be put into operation in case of mobilization:

of which had been discussed earlier with the Reich Propaganda Ministry.

3. Preparation of a military censorship program.

4. Education of the officers to be employed in the *Wehrmacht* Propaganda Section.

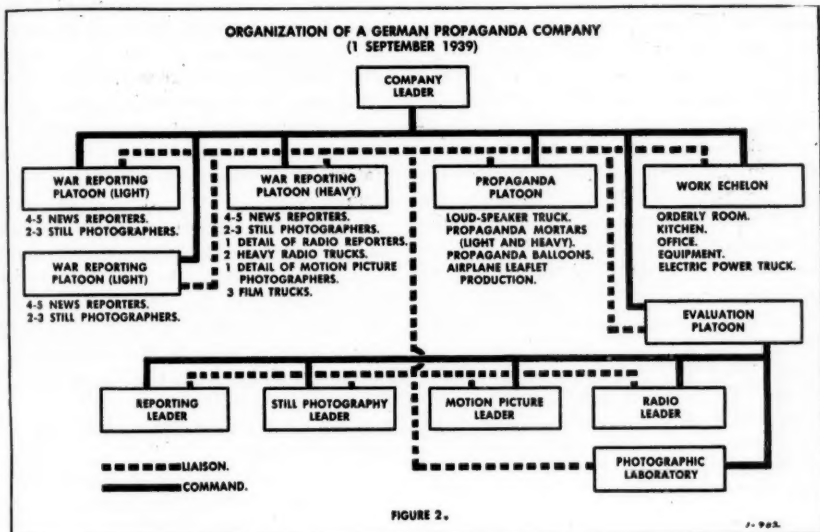
According to the mobilization regulations, a propaganda company was to be established in every army and army group headquarters, and a war reporting platoon in every air force and naval base headquarters.

The army propaganda companies had three principal missions: propaganda against enemy forces, news reporting, and troop education. Later, propaganda for the populations in the occupied areas was

included as an additional mission. This, however, was handled by specially organized formations which were under the orders of the various military commanders.

The propaganda company in being as of 1 September 1939 possessed the organi-

propaganda mortars. Their missions included the editing and distribution, or shooting (for those units equipped with propaganda mortars), of propaganda leaflets; the preparation of posters and transparencies; as well as the dissemina-



zation which is diagrammed in Figure 2.

War Reporting Platoons

The light war reporting platoon had at its disposal, for reporting from the fighting front, four or five reporters and two or three still photographers. Such personnel were generally divided into two mixed groups, each containing a proportionate number of reporters and photographers. The heavy war reporting platoon had the same number of reporters and still photographers, but as it was intended, primarily, for employment in larger operations it had radio and motion picture personnel as well as radio and film trucks.

The propaganda platoons possessed several loud-speaker trucks and, later,

tion of loud-speaker propaganda in the battle areas.

The evaluation platoons each possessed four different types of commanders—for reporters, photographers, motion picture personnel, and radio personnel. These officers, with the aid of corresponding professional personnel, had charge of the evaluation of the reporting and its rapid transmission to Germany. In addition, each propaganda company had its own photographic laboratory.

Chain of Command

The propaganda companies generally received their orders directly from the *Wehrmacht* Propaganda Section, usually by telephone. Orders were also received from the intelligence officers of armies

and army groups and, at times, from the corresponding authorities of the headquarters of the corps to which they were assigned. The company commander assigned his platoons, generally, to army corps and divisions. Physically, they were to be found at focal points in the fighting where there was a priority in the interest of effectual reporting. The heavy reporting platoon was not employed as a single unit, but was split up into detachments of varying strength. However, the use of all the motion picture personnel on one assignment, at one time, was conceivable and occurred, in 1940, in the campaign on the Western front for the filming of the documentary motion picture, "Victory in the West." Such unified employment was not used for radio reporting.

The propaganda company was further entrusted with the task of guiding the troop information and education program. This function was carried on in numerous ways: by editing and distributing bulletins and front newspapers; by motion pictures; and special talks and lectures.

The establishment of rapid and efficient news channels was of great importance. In addition to the operational command network, all civil communication lines were available to the *Wehrmacht* Propaganda Section, as well as a strongly augmented courier service. The Section also possessed an organic air squadron which made daily flights to various advanced message centers where it picked up the reports, photographs, motion pictures, and radio messages (on records) which had come in and had been passed by the Army censoring officers. However, the radio messages were often broadcast directly from the front by way of the Berlin transmitter.

Military Censorship

The censoring organization included officers from all three branches of the

armed forces, and from all departments of the reporting service. In order to expedite censoring, these officers were detached and operated with the Ministry of Propaganda, the Berlin transmitting station, and the *Wochenschau* (a weekly propaganda film). Other censoring officers were assigned to the army high commands, the various air forces and naval base headquarters, and with the subordinate corps headquarters in Germany.

The mission of military censorship was to ensure that no classified military information was made public by way of propaganda.

In order to obtain first-hand information on command activities, and in order to be in constant contact with the different branches of the armed forces, the *Wehrmacht* Propaganda Section maintained liaison officers with the Army, *Luftwaffe*, and Navy headquarters; the Reich Propaganda Minister; *Wochenschau*; the Reich Press Chief; and the Foreign Office.

A unique influence was exercised by the *Wehrmacht* Propaganda Section's large publications, "Die Wehrmacht" for the home area and "Signal" for the areas outside of Germany. Both of these publications reached the two million mark in the number of copies printed. In addition to this, the different services had publications of their own, of which the "Adler" of the *Luftwaffe* was the most important. The *Wehrmacht* Propaganda Section also had great influence over the front-line newspapers. Members of the Section wrote books and pamphlets concerning various campaigns, individual feats of arms, and basic military matters.

Psychological warfare played a decisive role, both in the *Wochenschau*, and in the many broadcasts. A certain degree of competition between the different branches of the armed forces was unmistakable in this as well as in the material heard over the loud-speakers of the

Army, the *Luftwaffe*, and the Navy. Traveling exhibits were intended to bring the picture of the War and the victories of the Germans closer home. The local German press was influenced also, to a certain extent, through the use of special propaganda officers assigned to the subordinate corps headquarters.

Replacement and Training Department

Importance was also attached to the Replacement and Training Department of the *Wehrmacht* Propaganda Section. At first, there existed a replacement company, later a battalion, and finally, when the propaganda organization had reached the numerical strength of 15,000 men, a double battalion.

The Propaganda Replacement and Training Department had the following missions to perform:

1. Selection of the reporter replacements and the technical and professional personnel required for the Propaganda Ministry.
2. The military and professional training of the personnel.
3. The preparation for, and the replacement of, matériel for the front-line formations and the establishment of new formations.
4. The handling of special reporting assignments at the front and in the home areas.
5. The organization of exhibits.
6. The maintenance of the courier service.

Propaganda Training

During the War, many courses were given by the Propaganda Replacement and Training Department. Training was given to eight professional categories, including: reporters, photographers, motion picture personnel, radio reporters and technicians, active propagandists, war painters and press artists, printers, and stenographers and teletype operators. This organization also tested and approved new

equipment and innovations including the propaganda mortars, the motorized printing platoons, and propaganda balloons.

It became evident, as early as the Polish campaign, that the organization was not adequate in many respects. The Army did not see itself represented sufficiently; the *Luftwaffe* acted too independently in its propaganda; the propaganda companies worked too sluggishly and front-line reports were transmitted too slowly; and friction developed between the *Wehrmacht* Propaganda Section and the Propaganda Ministry with regard to censoring, personnel, and other matters.

As early as the winter of 1939-40, decisive organizational changes were made such as the formation of Group V (Army) and the more pronounced subordination of Group VII (*Luftwaffe*). The personnel of the propaganda companies were changed about and the courier service placed under more stringent regulations. In addition, all personnel were given military ratings instead of their quasi-military ranks.

With the reconstruction of the *Wehrmacht* Propaganda Section in 1939-40, a new phase of intense activity began. As a result, the reporting activities during the Western campaign of 1940 and the first year of the Russian campaign of 1941 proceeded vigorously. However, a certain degree of overorganization soon made itself evident. The propaganda companies, particularly, proved to be too inflexible for war reporting in the case of rapid and changing operations. Both these things led to a simplification and reorganization of the propaganda organizations. Essentially, the dissolving of Group V (Army), Group VI (Navy), and Group VII (*Luftwaffe*) in the late autumn of 1942 and the creation of an information group and a film staff were part of the reorganization program.

With this reorganization, a partial dissolving and rearranging of the propaganda units also took place. War reporting was taken over by the new war re-

porting platoons (combat propaganda) which had been formed in the army groups and the air forces. These were subordinated to the staff officers for propaganda (Sto-Prop). While the propaganda companies of the Army had to devote themselves, mainly, to the conduct of combat propaganda and troop information and education, combat propaganda operations and the acquisition of the necessary propaganda matériel devolved on the Sto-Props of the army groups and the propaganda units immediately under them.

The combat propaganda platoon had, above all, the mission of preparing material for propaganda activities among the enemy which, in the Eastern theater of operations, enjoyed special success. For the preparation of air leaflets and posters, the Sto-Props had special motorized and railway printing plants at their disposal. The latter were also used to publish the front newspapers since it was frequently impossible to fall back on the printing establishments of the occupied areas. In addition to this, the combat propaganda platoons were used to reinforce the propaganda companies at the front, and at points of main effort.

The war reporting platoon of an army group had four men (reporter, still photographer, motion picture photographer, and radio announcer), with corresponding equipment. It was fully motorized. By culling out the reporters of lesser ability, the quality of the reporting was raised considerably. The propaganda companies retained only two reporters and one photographer for special missions. During the second half of the War, the Propaganda Section and the *Wehrmacht* were subjected to increasingly strong influences from the political side. Troop information and education was taken over more and more by the command officers of the National Socialistic Party (NSFC).

Political Interference

While, hitherto, the *Wehrmacht* Propaganda Section had enjoyed a high degree of independence, the War Propaganda Ministry now began, in an increasing degree, to take over the responsibility of war propaganda. The failure of the attempt on Hitler's life, on 20 July 1944, and the increasingly unfavorable war situation, led to further disregard for the *Wehrmacht* Propaganda Section. On 1 April 1945, General von Wedel turned over his office to an SS leader. Even before this, however, the serious shortage of manpower had led to the dissolving of the propaganda staff and forces.

Lessons Learned

It may be accepted as generally applicable that propaganda which was dual in nature (political and military) showed itself to be a disadvantage in many respects. It is true that the contrast between the Reich Propaganda Ministry and the *Wehrmacht* enhanced these disadvantages considerably. This situation does not need to exist, although nearly every war, up to the present time, has been accompanied by tensions between the military and the political leadership.

It is not possible for us to do without a military propaganda organization. Combat propaganda, troop education, and the war reporting that have been described demand it. Such an organization must be developed in time of peace. However, it is to be borne in mind that only a framework need exist into which professional personnel will fit, in case of mobilization. They can be taken from civil propaganda organizations, the press section of the Government, as well as the radio, the photographic, and motion picture services and other professional fields. There must be complete military training for these persons, and, in addition, special training for special missions.

As far as preparation for propaganda against the enemy is concerned, this requires constant and intensive study of the enemy, and demands, among other things, complete familiarity with his psychology, his political concepts, his economic situation, and his cultural interests.

Our military command and troops must be prepared for propaganda warfare by the reinforcement of their morale through the medium of one's own propaganda and the provision of a defense against the propaganda of the enemy. Civilian and military personnel also must be prepared, mentally and spiritually, for possible crises in order to be able to hold, in case of war.

The technical side of a propaganda machine requires the use of considerable matériel, constant experimentation, and continual development. A fast-working, dependable liaison and military intelligence service must be established in time of peace. Even informing the troops in the field, concerning the events at the front, at home, and in other countries, requires preparation.

Experience has taught us that we cannot dispense with censoring.

The greater the foresight employed in organizing reporting and propaganda activities, the greater the teamwork on the part of all engaged in the shaping of public opinion. Lethargy, both on the part of the reporting organizations, as well as on the part of the public, must be

fought by changes in personnel, methods, and subject matter.

Summary

Summarizing, it may be said that the *Wehrmacht* Propaganda Section, regarded from the theoretical standpoint, went far beyond the bounds of its proper mission, particularly in the field of foreign propaganda. It saw itself forced to this under the existing circumstances. It is quite possible that, with greater initiative and with political orientation on the part of the *Wehrmacht* High Command, it could have become a powerful carrier of political counterforces.

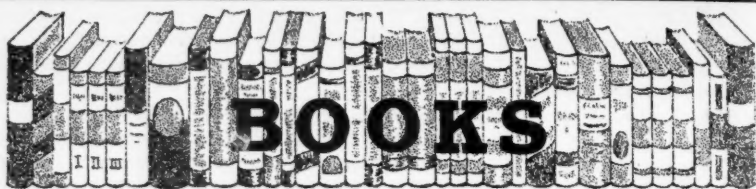
The three missions entrusted to it: propaganda against the enemy, war reporting, and troop education were developed rapidly in the peacetime organization which suffered, temporarily, from overorganization and later required reorganization and reduction. War propaganda activities were often estimated incorrectly by its own administration; were constantly attacked by the *Wehrmacht*; and often not understood, or incorrectly interpreted, by the troops.

From the political side, the *Wehrmacht* Propaganda Section was treated with suspicion and severe opposition. The fact that it not only asserted itself but carried out its intentions is to be credited to its courageous and dependable reporting, its tireless education of the troops, and to skillful organization.

Initial fighting strength would rapidly be dissipated if it were not supported by a determined people and a vast industrial potential ready to sustain our initial effort and support its expansion to whatever degree might be required for the achievement of victory.

Admiral Forrest P. Sherman

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FOR THE MILITARY READER

DEFENCE OF THE WEST. By B. H. Liddell Hart. 335 Pages. William Morrow and Co., New York. \$4.00.

Captain Liddell Hart's 26th book, by his publisher's count, has the familiar ring of the old master. There is the pervading air of pessimism; the fault finding with past, and even present, decisions of authority in high places; and the posing of numerous questions in an oracular style.

Several of the chapters of this book have appeared previously as magazine articles. "Was the 1940 Collapse Avoidable?" and "Was Russia Close to Defeat?" were published in the June and July 1950 issues of the *MILITARY REVIEW* while "How to Quicken Maneuver and Gain Flexibility" ran in the *British Army Quarterly* in July.

Part One reviews World War II strategy with the chill accuracy of a post mortem. The author joins the ever widening condemnatory ranks of those who now see in "unconditional surrender" a major blunder. He is no less brutal with the mistakes, generally and conveniently blamed upon Hitler, for German lapses, particularly the harsh policy toward Russian civilians and prisoners of war. But his strong disapproval of Allied fostering of resistance movements, echoing the ultra-conservative Duke of Wellington's historic utterance regarding Spain, runs against the current trend of thinking no less than it contradicts, somewhat, his own attack on German procedure in Russia.

Reflections on atomic warfare weigh

heavily in Part Two's "Riddles of the Immediate Future." The assertion that "they [atom bombs] are not a tactical weapon suitable against land forces" is a bit emphatic despite the qualifying addition of the phrase "at present."

Part Three assays Russia's military might including the conjecture that Soviet abstention from the use of its presumably well-organized airborne power was a long-range plan to keep it under wraps for a future invasion of Britain.

In the Fourth Section, Liddell Hart has a go at "current military problems," taking solid cracks at conscription, an ancient anathema to the author, while he urges "complete" unification of all armed services under a single chief of staff. Both arguments should stir up enough discussion to delight even the veteran idol-smasher himself.

"Basic Problems of Yesterday and Tomorrow" are the subjects of the concluding section. Conscription is further belabored, the difficulties of establishing and maintaining an "international force" are retold with one helpful guide post: the increasing mechanization of weapons decreases the need for a national spirit, so concentrate "the more powerful offensive weapons solely in an international force." The reader's immediate "How?" is not answered. "Limitation" of warfare greatly concerns the author as it does General Fuller, but the matter of enforcing a martial set of Queensberry rules is not solved. The book's concluding note is irrefutable. Another world war will be an appalling calamity for all concerned.

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THE SOVIET IMAGE OF THE UNITED STATES. By Dr. Frederick C. Barghoorn. 297 pages. Harcourt, Brace and Co., New York. \$4.00.

In this scholarly and well-documented book, the author, formerly Press Attache of the American Embassy in Moscow, has presented a detailed analysis of the Soviet propaganda operation. Subtitled "A Study in Distortion," the work undertakes to identify and interpret for the lay reader the basic devices and techniques by which the ideological offensive is waged—the never-ending and intense barrage of vilification of the proponent capitalistic democracy of the West, the United States.

As examined with penetrating and professional skill by the author, the reader is enabled to understand the tactical components of propaganda, those numerous cogs and gears of that efficient machine which, through cynical perversion of the truth, has erected that considerable portion of the Iron Curtain not manned with tanks and Tommy guns.

While the fruits of the author's research provide a highly interesting historical background, his conclusions and recommendations may fall somewhat short in view of the most recent developments in Korea. Dr. Barghoorn advocates the thesis, not original, that the West has found an answer to the USSR challenge in the "dual policy of containment of Soviet power and rehabilitation of the area behind the dike." The latter policy is considered to require, first, the complete understanding by the Western World of the "complex and sinister" character of the Kremlin's propaganda; and second, the inculcation of the "enslaved people of Russia itself" with the idealism of democratic citizenship. Moreover, states the author, more emphasis should be placed upon the "rehabilitation" component, and less upon the "containment" aspect.

The reader consequently is led to understand that American counterpropaganda, as delivered through the Voice of America and the Russian language newspaper "Amerika," in concert with the espousal of a somewhat nebulous One Worldism called the "people's deal," will enable dynamic democracy to recapture the initiative from communism and solve even the problems posed by Soviet-American relations in the atomic age.

—Whether the military reader is convinced of the highly idealistic conclusions of the book is immaterial. Its contents comprise a vast store of references of undoubted value as applied to studies in psychological warfare and military government.

THE CURTAIN ISN'T IRON. By Joseph C. Harsch. 192 Pages. Doubleday & Company, Inc., Garden City, New York. \$2.00.

Perhaps many people have wondered just how much "iron" is in the curtain that Russia has spread over Eastern Europe since the end of World War II. Many people may also think that Russia, with her tactics, has gained a tremendous foothold in the countries adjacent to her western boundary. However, Marshal Tito has defied the Russian fist of authority. The Finns have proved that they were of stern stuff and would not be pushed around by the Russians. And several other countries in the "twilight zone" have shown a decided willingness to go "western." Then, too, there are those who fear that a war of aggression and liberation is the ultimate solution to the encroachment of communism. While there can be no absolute answer to these questions, the author, Joseph C. Harsch, foreign correspondent for *The Christian Science Monitor*, has vividly pictured the situations that exist in the "twilight zone" of Russia's influence and he has shown with decisive clarity that the curtain isn't iron.

POPSKI'S PRIVATE ARMY. By Lieutenant Colonel Vladimir Peniakoff. 369 Pages. Thomas Y. Crowell Company, New York. \$3.75.

Dealing with the interesting and unusual late experiences of a small, independent force operating against the Germans in North Africa and Italy, this book derives its title from the designation given a handful of British and Arab soldiers which was called an "army." The book narrates the adventures of the author's command—about 120 men at its greatest strength—in the Libyan and Tunisian deserts and behind enemy lines in Italy. It was a "private army" because of its high degree of autonomy, and called "Popski's" because the author's name was likely to be misunderstood when spoken over radio or telephone.

The book chronicles the organization of an intelligence network among Senusi Arabs; destruction of an enemy gasoline dump; assisting British prisoners to escape their captors; desert reconnaissance for the Eighth Army; and actions in concert with Italian partisans in harassing the retreating Germans. Historically, the book is of interest to military readers because of the facts reflected by these small actions in connection with the North African and Italian campaigns. Some operational techniques and certain informative descriptions of desert characteristics are indicated. Apart from the interest feature of the narrative, the value of selected descriptions of terrain, and indications of some worth-while techniques, the book raises a number of questions. The worth of and effectiveness of special operations may be challenged because of this narrative. Abortive and unsuccessful missions, apparently pursued without specific planning and lacking command supervision, are related. Gaps so reflected may be charged to security,

but the omissions leave doubts as to the efficacy of an autonomous group so committed. An apparently major editorial deficiency of the book is shown in the selection and arrangement of its maps.

WHY WAR CAME IN KOREA. By Dr. Robert T. Oliver. 260 Pages. Fordham University Press, New York. \$2.95.

Analyzing the background of the current Korean situation, the author has presented a complete, easy reading account of Korean history and its impact on that country today.

He discusses the problems created by the division of Korea at the 38th Parallel and by a dual occupation force, the impact of changing State Department attitudes, the significance of the independence movement which began in 1919 and culminated in elections supervised by United Nations representatives, the terror caused by Communist-inspired guerrilla attacks across the artificial border long before the outbreak of the war, as well as Korean geography, culture, and postwar civil and economic advances.

Along with his historical and political discussion of Korea, the author sketches the treatment of Far Eastern peoples by the British, Americans, Dutch, and French. He brings up communism colonialism, and racism, showing their impact on Asiatic peoples and the resultant attitude of the Asians toward the white man.

Based on the current situation in Korea and the paucity of information concerning this country prior to the Communist-inspired attack on South Korea, the military reader will find this book of interest in gaining a better insight into the recent events in Korea.

CALCULATED RISK. By General Mark W. Clark. 500 Pages. Illustrated; Index. Harper & Brothers, New York. \$5.00.

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